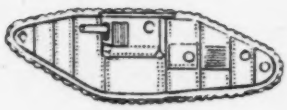
ARMORED CAVALRY JOURNAL



Greetings to:

ARMORED CAVALRY JOURNAL

"My best wishes to the Armored Cavalry Journal for a successful career in this new field. This is a timely and forward-looking step, and I feel sure that it will continue to keep alive the glorious traditions built up by our old Cavalry units of the war and the record of achievement of our newer Armored units.

"Further, in its appeal to those who are now serving with, or will in the future serve with mechanized and Armored units, it will help to build up the spirit of coordination and team play so essential to the future success of our armed forces.

Jacob L. Devers

General, United States Army,
Commanding, Army Ground Forces."

JULY-AUGUST, 1946

The 11th Armored Division Society Headquarters is now permanently established in the offices of the Armored Cavalry Journal. Address all communications to the Secretary, 11th Armored Division, c/o The Armored Cavalry Journal, 1719 K St., N.W., Washington 6, D. C.

Colonel W. A. Holbrook, Secretary.

The Armored Cavalry Journal is glad to welcome the 11th Armored Division Society and will be glad to hear from any of the other Armored Divisions or Cavalry Reconnaissance units that have formed a society. We are planning to devote a section in each issue of the Armored Cavalry Journal exclusively to any news or notes that these societies would like to have published. Write to Colonel E. M. Sumner, Editor, for further information.

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Armored Cavalry Journal

Published Bimonthly by The U. S. Armored Cavalry Association

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Volume LV JULY-AUGUST, 1946 Number 4

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Publication date: July 25, 1946. Deadline date, next issue: August 10, 1946.

THE ARMORED CAVALRY JOURNAL IS NOT RESPONSIBLE FOR OPINIONS EXPRESSED IN PUBLISHED CONTRIBUTIONS

Editorial offices: 1719 K Street, Northwest, Washington 6, D. C. Copyright, 1946, by the U. S. Armored Cavalry Association. Publication offices: 1406 East Franklin Street, Richmond, Virginia. Entered as second class matter at Richmond, Virginia, under the act of March 3, 1879, for mailing at special rate of postage in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, organizations, and military personnel, $3.00 per year. Foreign $3.50 per year. Canada: including War Exchange Tax, $3.50. Domestic civilian, $4.00. All subscriptions payable in advance. Single copies, 75c. Extra copies to military subscribers, 50c.

The 113th Cavalry Group

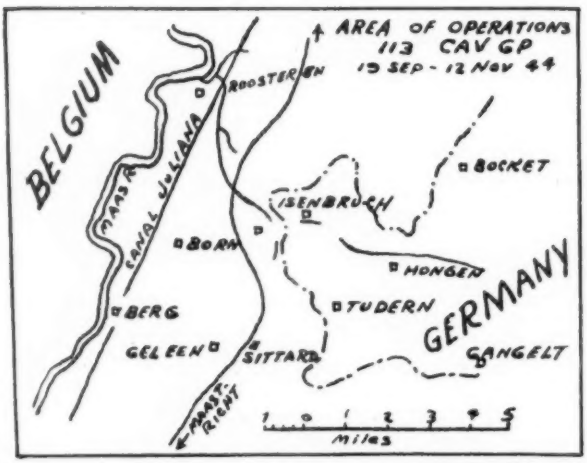
Defense of the north flank of the 12th Army Group, Sittard area, September 19-November 12, 1944.

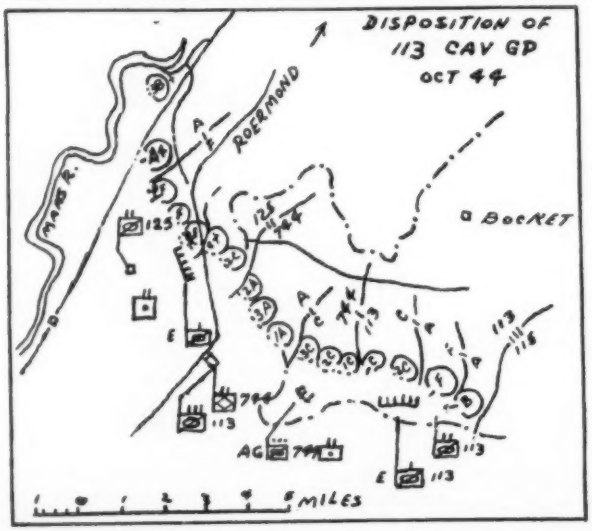
SECOND OF A SERIES

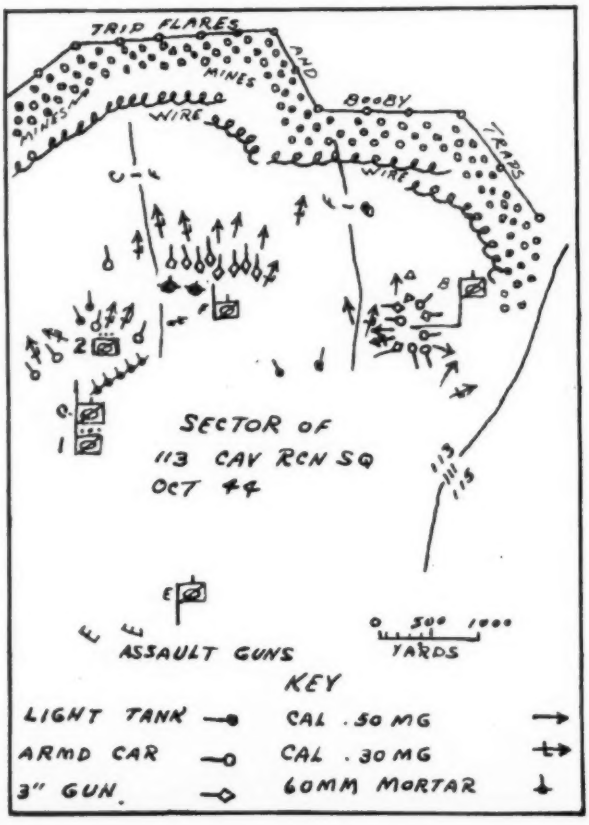
DURING the night of September 19-20, 1944, the 113th Cavalry Group—composed of the 113th Cavalry Reconnaissance Squadron, the 744th Light Tank Battalion (less one company), the 246th Engineer (C) Battalion, Company C, the 702d Tank Destroyer Battalion, an engineer company (less two platoons), and a tank destroyer platoon—took over the defense of the north flank of XIX Corps (the First Army and 12th Army Group), in the Sittard area. The area extended from the Maas River to the Holland-German border, along a front of about six miles. On the right was the tank battalion (less two companies), with a cavalry reconnaissance troop and engineer company and the tank destroyer company (less one platoon) attached. On the left was the cavalry squadron (less a reconnaissance troop), with a company of engineers and a platoon of tank destroyers attached.

Early September 20, the work of organizing the position was begun, and aggressive reconnaissance was initiated to the north where contact was established with the enemy elements of the 176th Infantry Division, which were supported by artillery and tanks. The terrain east of the German border was open and gently rolling, and provided excellent fields of fire and observation. West of the border, the ground was generally flat and wooded and cut with numerous drainage ditches. At 1200 September 22, the 113th Cavalry Group assumed responsibility for a widened sector which extended to Gangelt, Germany, four miles to the east.

From September 29 to October 3, the 113th Cavalry Group (the 125th Cavalry Reconnaissance Squadron, less Troop B, rejoined it on September 30) advanced its line four miles to the left, forced a temporary vehicular crossing over Saeffelen Beek near Isenbruch, and took







part in a general offensive action launched by the 29th Infantry Division. Thereafter, the group resumed the defensive, with three units abreast from left to right in the following order: the 113th Cavalry Reconnaissance Squadron, the 744th Light Tank Battalion (less one company), and the 125th Cavalry Reconnaissance Squadron (less Troop B). The only reserves available were one platoon for each unit. Up to three light and two medium artillery battalions, whose organic assault guns proved invaluable, supported the group. Aggressive patrolling was conducted, and much information of the enemy was gained. Every practicable measure was taken to strengthen the defense of this vital line, which was based upon no appreciable water obstacle.

On November 2, the 17th Cavalry Reconnaissance Squadron, normally a part of the 15th Cavalry Group, took its place in the line and relieved the 125th Cavalry Reconnaissance Squadron, which passed into group reserve. From then on, it was possible to rotate complete units from the line into reserve, and the effect of this system was very beneficial. However, it was not used long, for on November 12, the Guards Armored Division of the 30th British Corps relieved the 113th Cavalry Group, which then passed into reserve.

To summarize this performance by the 113th Cavalry Group: a division-seized front was successfully held for six weeks while larger units of the corps were operating against the Siegfried Line; mechanized cavalry demonstrated remarkable staying power, although little rotation of units was possible; a need for a third squadron, to provide a mobile reserve and to make possible the relief of units long committed, was keenly felt.

The 113th Cavalry Group

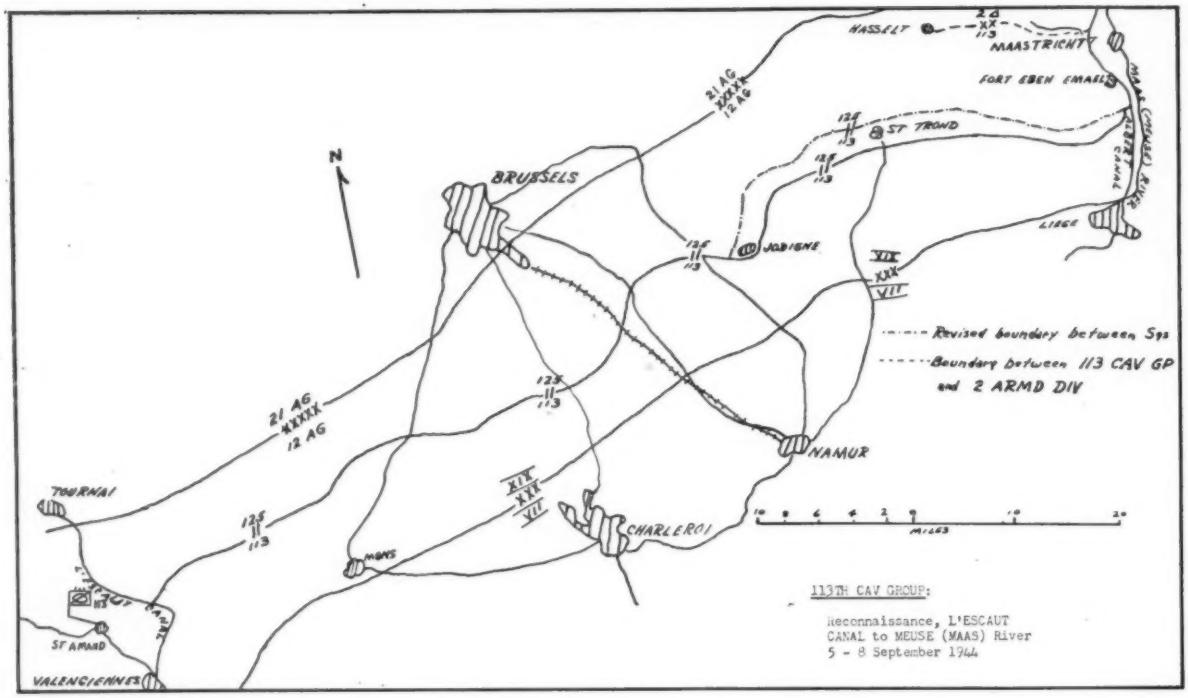
Reconnaissance of XIX Corps zone of action, L'Escaut Canal to Albert Canal, September 5-8, 1944.

ON September 4, 1944, the 113th Cavalry Group (Mecz.), which was bivouacked south of Tournai, Belgium, received the mission of moving across the L'Escaut Canal early September 5, to reconnoiter aggressively east and northeast in the zone of action of the XIX Corps. This zone comprised a strip of land 20 miles wide and 125 miles long, which passed between Charleroi and Brussels, both exclusive, and struck the Meuse River between Liege, exclusive, and Maastricht, inclusive. The enemy situation was to be determined. Strong opposition was to be by-passed. The condition of roads and bridges on the five principal routes, which the corps planned to use in its main advance, was to be reported. The 113th Cavalry Group, which comprised, besides group headquarters, the 113th Cavalry Reconnaissance Squadron and the 125th Cavalry Reconnaissance Squadron (less Troop B and Company F), was to be reinforced by Company B, 82d Engineer (C) Battalion, and Company C, 803d Tank Destroyer Battalion. No support could be expected from the main combat elements of the corps, for it was temporarily immobilized because of a gasoline shortage.

Early September 5, the advance was begun, with squadrons abreast, the 113th on the right, and with a platoon of engineers attached to each squadron. On September 6, a tank destroyer platoon was also attached to each squadron. Squadrons advanced with two cavalry reconnaissance troops abreast. By night September 5, the line of the Namur Brussels Railway had been reached against enemy resistance, which was scattered and generally light until late in the day when the 113th Cavalry Reconnaissance Squadron encountered stiff opposition. Early September 6, the advance was resumed, with the 113th squadron in sharp contact throughout the day and the 125th squadron making favorable progress on its left, although delayed on its right at Jodigne until this resistance was by-passed.

On September 7, the 113th Cavalry Reconnaissance Squadron fought its way to St. Trond, where strong resistance was encountered, while the 125th Cavalry Reconnaissance Squadron, now reinforced by Troop C of the 113th Cavalry Reconnaissance Squadron, advanced to the vicinity of Hasselt, which was captured before dark.

By this time, the 2d Armored Division had refueled, and its reconnaissance elements had overtaken the 113th Cavalry Group. The corps commander decided that the 2d Armored Division would operate in the left portion of the corps' zone; and at 0800, September 8, the 113th Cavalry Group received orders to close in to the right. By midafternoon the Albert Canal was reached by all troops, and by dark it had been determined that all bridges over the canal and the Meuse (Maas) River had been destroyed by the enemy. The 113th Cavalry Group screened the line of the canal, and at the same time reconnoitered Fort Eben Emael and the area lying between the canal and the river. When the 30th Infantry Division came up on the afternoon of September 10, the group disposed itself to cover the division's flanks.



Mechanized cavalry's self-sufficiency was well illustrated in this operation. It is also of interest that although this was a reconnaissance mission, most of the resistance encountered had to be fought and defeated in order to permit the 113th Cavalry Group to advance and accomplish its mission.

The 2d Cavalry Reconnaissance Squadron

Crossing of the Moselle River and seizure of Wincheringen as a diversion for an attack by the XX Corps, February 19, 1945.

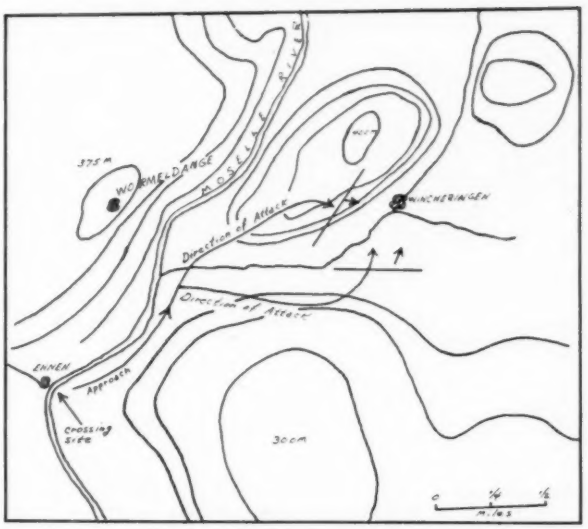
THE 2d Cavalry Group, heavily reinforced as Task Force Reed, was ordered to make a crossing of the Moselle River during the night of February 18-19, in squadron strength, and to seize and hold the town of Wincheringen. At the time orders were received the 2d Cavalry Group was defending the west bank of the Moselle River from Haute Kontz to Mertert. The purpose of the operation was threefold: to create a diversion to assist the offensive of the XX Corps, scheduled to attack north at 0600 hours, February 19; to clear the Saar-Moselle triangle; and to capture Trier. It was expected that leading elements of the 10th Armored Division with one chemical smoke generator company attached would reach Wincheringen by 1600 on February 19.

At this time, the enemy troops in the Saar-Moselle triangle comprised elements of the 11th Panzer Division, the 416 Volks Grenadier Division, and two fortress machine-gun battalions. The divisions were generally facing south, opposing the XX Corps. However, combat groups of the 11th Panzer Division were in reserve east of Wincheringen, and the line immediately around Wincheringen was held by the 44th Fortress Machine-Gun Battalion, one company of which occupied the town and manned outposts on the riverbank. Some artillery and mortars supported this company.

The battalion reserve was located several kilometers to the east.

Wincheringen was dominated by hills on the west, north and south, and possession of these hills would assure capture of the town and assist in repelling counterattacks. Secrecy in crossing the river and launching the attack before enemy reinforcements could arrive was considered essential. It was decided not to cross opposite Wincheringen but at Ehnen, one mile up the river, where good covered approaches existed and there were good shore lines on both sides. No artillery preparation was contemplated; however, a total of two battalions was available to deliver counterbattery and defensive fires on call. In addition, six towed 3-inch guns were ready to give direct fire support after daylight, and the chemical smoke generator company was ready to "smoke" the river and cover the reinforcement of the attack and the evacuation of the wounded. Boats were to be manned by engineers. The assault force was to comprise the 2d Cavalry Reconnaissance Squadron (less Troops C and E and Company F), with Company C 285th Engineer (C) Battalion attached.

The crossing was started at 0100, February 19. One platoon of engineers led and, upon landing, outposted the beaching site. The remainder of the attacking force followed, and the crossing was completed by 0300. Complete surprise had been effected, and no enemy resistance was encountered until the movement toward Wincheringen began. The force then received small-arms, mortar and artillery fire, the latter being generally ineffective as it fell north of the crossing site. By daylight, the hills west and south of the town had been seized and the western end of the town captured. Fighting continued through the day, and attempts of the enemy to relieve the town were broken up by artillery concentrations and direct 3-inch gun fire. At 1730 a final attack was launched to clear the town. At 1800 leading elements of the 10th Armored Division arrived and supported the assault and by 1900 hours the town had been successfully cleared.



The 38th Cavalry Reconnaissance Squadron

Defense of the Monchau area against German attack, December 16-17, 1944.

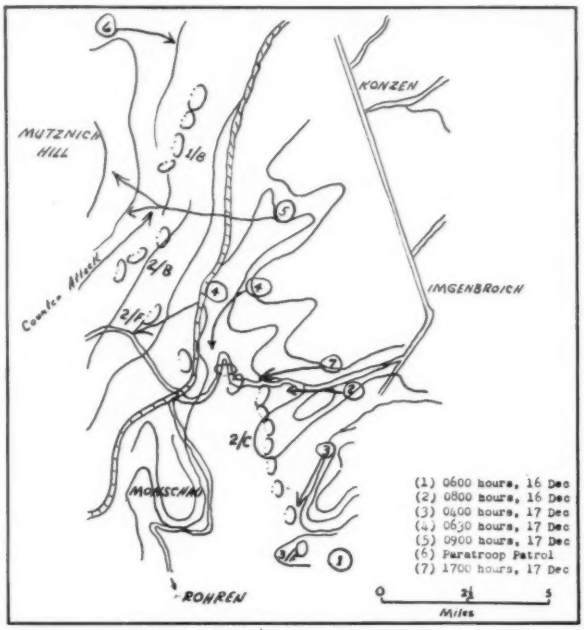
ON November 10, 1944, the 38th Cavalry Reconnaissance Squadron, under control of the 102d Cavalry Group, took over the defense of a sector of the V Corps' front which faced the Siegfried Line in the vicinity of Monchau. The sector was of particular importance because it guarded the approach to a network of roads which led to Eupen and Liege. On December 16, 1944, the squadron was disposed with cavalry reconnaissance troops C, B, and A abreast. Troop C was reinforced by a section of the 3d Platoon of Company F, while the 2d Platoon of Company F covered the 500-yard gap between Troops C and B. Troop A was in contact with the 102d Cavalry Reconnaissance Squadron, on the left, and Company F, less detachments, was in Monchau. The squadron had in support, besides Troop E, the 62d Field Artillery Battalion and two medium field artillery battalions.

Early December 16, German infantry struck this position, and made seven attacks during that day and the next. These attacks, which comprised the northern effort of the German winter offensive, were, except for the fifth attack, broken up by defensive fires. After the

second attack the squadron commander asked group for reinforcements, and Company A, 146th Engineer (C) Battalion, and six machine-gun crews from the 186th Field Artillery Battalion were sent forward. Troops C and B were each reinforced with a platoon of engineers, and the engineer company (less two platoons) was placed in squadron reserve on the high ground just west of Monchau. The six machine-gun crews were placed in support of the tank platoon in the center. There was considerable activity on both sides during the night of December 16-17.

At 0900 hours, December 17, a fifth attack, made between the 1st and 2d platoons of Troop B on Mutznich Hill (see sketch), broke through the position on a front of 200 yards and overran three artillery observation posts. The squadron commander sent a platoon of engineers and a section of light tanks to Troop B's support, and with these units and the 2d Platoon of Troop B, a counterattack was launched and the enemy driven from his forward position.

During the height of this action, the squadron commander had called upon the group commander for additional reinforcements, and at 1100 hours, Company A, 47th Armored Infantry Battalion and one platoon of Company A, 10th Tank Battalion, were dispatched to the squadron. Arriving at about 1200, the infantry company was directed to patrol the woods in the rear of Troop B's position and the tank platoon was ordered into squadron reserve. During this time, about 20 enemy planes, one of which was shot down, strafed the squadron's position. At 1700, the 47th Infantry Regiment of the 9th Infantry Division closed into the area just west of Monchau. The following morning, December 18, this regiment relieved the 38th Cavalry



Reconnaissance Squadron in that part of its sector which was occupied by Troop C.

The outstanding success of the 38th Cavalry Reconnaissance Squadron in defending its vital sector against repeated enemy attacks is felt to have been mainly the result of excellent organization of the ground, including very thorough laying of mines; installation of warning devices and erection of wire; very careful sighting of weapons and utilization of terrain; well-planned and effective supporting fires; excellent communications; and a determination to hold the position.

The 87th Cavalry Reconnaissance Squadron

Attack against Meinkenbracht, April 12, 1945.

ON April 11, 1945, the 87th Cavalry Reconnaissance Squadron, of the 7th Armored Division, then in the vicinity of Landbeck, was ordered to capture Meinkenbracht and reconnoiter the routes: Meinkenbracht-Erndorf, and of Meinkenbracht-Linnepe. The attack was part of the mopping up operation by the 7th Armored Division in the Ruhr pocket.

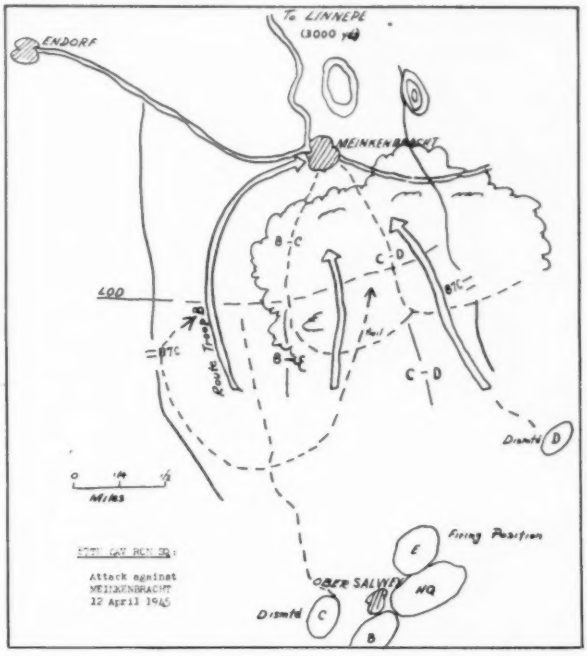
The squadron's plans called for Troops B, C, and D, each with one platoon of Company F attached, to advance dismounted through the woods and assault the town. Each troop was to operate in the zones shown on the sketch, and Troop E was to support the attack from the position indicated. The final assault on the town was to be made from the south by Troop C, while Troop D was to cut the main approach route from the west, take the high ground southwest of town, and

join the Troop C attack on squadron order. The 434th Armored Field Artillery Battalion was in direct support.

At 0600, April 12, the leading elements of the troops moved to the designated forward assembly area in the vicinity of Ober Salwey, where the reconnaissance troops—who were to be accompanied by tanks—dismounted and prepared to go forward on foot. Squadron headquarters was set up just east of Ober Salwey, while Troop E went into position as shown on the sketch. Troop A at this time was attached to Combat Command R on a separate mission.

As the reconnaissance troops pushed through the woods, the 434th Armored Field Artillery Battalion and Troop E fired artillery preparations on the town. Troop B, which had the least trouble with the terrain and met little resistance, pushed rapidly ahead of Troops C and D. Taking advantage of this fact, the squadron commander ordered Troop B into the town ahead of Troop C. This maneuver was accomplished with little loss to the attacking forces, and the speed of the attack resulted in the capture of 581 prisoners and a complete collapse of the defenses of the town. Troop B, moving rapidly through the town, pushed reconnaissance to Erndorf and Linnepe and found them occupied by the enemy. Troops C and D continued to advance to their zones and assembled at Meinkenbracht.

This action illustrates a rapid and successful dismounted assault by mechanized cavalry against a defended town. The rapid advance of Troop B was promptly exploited to accomplish the squadron's mission, and also reduced the enemy's pressure on Troops C and D, thereby decreasing the number of casualties which might have been suffered in those troops.



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The conclusion of the series of articles of which the above are a part, and which describe the employment of cavalry in combat in the European Theater, will appear in the next edition of the Armored Cavalry Journal. Remaining articles are:

86th CAVALRY RECONNAISSANCE SQUADRON
Attack against Meinkenbracht, April 12, 1945.

89th CAVALRY RECONNAISSANCE SQUADRON
Delaying action by Troops A, B, C and E, Befort area, December 16-25, 1944.

92d CAVALRY RECONNAISSANCE SQUADRON
Reconnaissance for the 12th Armored Division, Neustadt area, April 8-16, 1945.

80th CAVALRY RECONNAISSANCE TROOP
Reconnaissance during advance of the 80th Infantry Division to Kassel, April 1-3, 1945.

104th CAVALRY RECONNAISSANCE TROOP
Attack from Borgentreich area to Weser River in advance of the 104th Infantry Division, April 7, 1945.

Face-Lifting a Cavalry Squadron

*by Captain Kenneth T. Barnaby, Jr.**

THERE seems to exist in the Army an unpublished and unrecorded SOP which dictates: "No matter what the piece of equipment is, change it" . . . (for the better, of course). The 117th Cavalry Reconnaissance Squadron (Mecz.) was no exception. Some of the changes it made in matériel stuck with it. Others, while serving a specific purpose for a limited time, were later discarded. But all of them evidenced interest and ingenuity by the entire command. It was command's policy to encourage everyone to submit suggestions which would increase the efficiency and scope of the very excellent equipment with which we were supplied.

In one or two instances, the modifications were a combination of personal experience and theory, plus the experimentations of other outfits with which the squadron operated. In most cases the changes were strictly VOCO, VOCG, or field expedient. We felt especially grateful to the commanding generals of the VI Corps and the Seventh Army for their objective viewpoints in permitting us a latitude of liberal experimentation.

Brief Squadron History

The 117th went overseas in September, 1942, as the 2d Squadron, 102d Cavalry Regiment (Mecz.). The regiment landed at Liverpool, England, and moved to Southern England where it drew all new matériel in accordance with the then existing TO/E. In November, 1942, the 2d Squadron was assigned to Security Command, Allied Force Headquarters, and shortly thereafter sailed for Algiers, Algeria, where it assumed responsibility for the mobile security of General Eisenhower's headquarters, both forward and main. Some elements and officers of the squadron worked in Tunisia and Sicily during the campaigns in those areas.

In November, 1943, under the new TO/E for a cavalry squadron, the unit was reorganized and redesignated the 117th Cavalry Reconnaissance Squadron (Mecz.). The prescribed changes in personnel and matériel were made; three new troops, Headquarters, C and E were formed, and training was intensified.

In early 1944, the squadron was relieved of assignment to AFHQ, attached to the Fifth Army and after a short period moved to Italy where it received its baptism of fire as a unit when the Anzio beachhead burst from its besieged enclave. The 117th, with the Fifth Army, broke out of the Cassino-Terracina line and drove up the west coast of Italy. It was withdrawn from action after 39 days of combat, reassigned to the VI Corps of the Seventh Army, and prepared for the August 15 invasion of Southern France.

Landing with the advance elements of the invading divisions, the unit spearheaded the Butler Task Force up through Southern France and continued as the reconnaissance element for the VI Corps. It made contact with the Third Army at Darnay, France, and proceeded with the Seventh Army, breaking through the Siegfried Line, crossing the Rhine, and pushing southeast through Germany and Austria to the Italian border, where on VE Day it halted its march.

Two weeks later, at the request of General Eisenhower, the squadron was moved to Frankfurt A/M, Germany, to reassume the duties of mobile security for "Ike's" CP. It continued in this capacity until November 25, 1945, when it was officially deactivated.

Changes and Modifications of Equipment

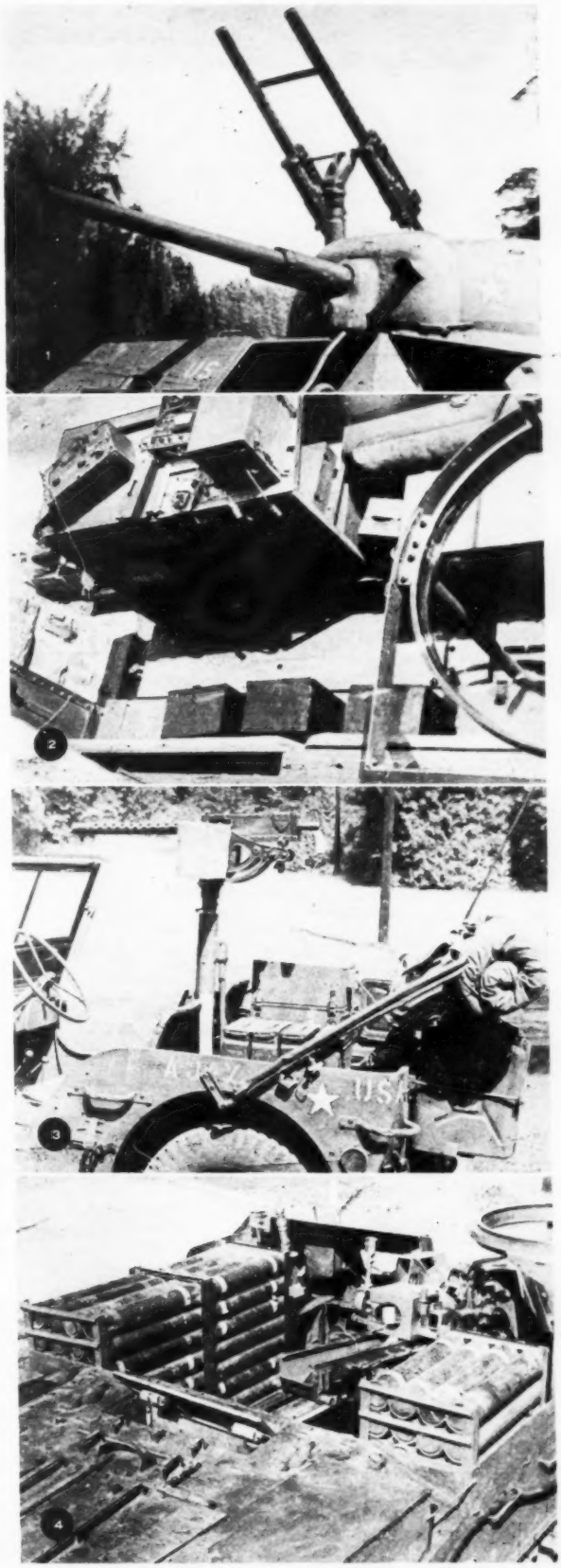
Armored Cars, M8:

Because of the lack of armament on the bottom of the M8 armored cars, casualties were high among drivers and radio operators. To provide protection, a half-inch sheet of steel armor plate was laid on the floor of the driver's compartment from beneath the foot pedals rearward to behind the cushion seats, and from side to side over the drive shaft hump. This plate was welded at the sides and center. It proved invaluably effective, and no M8 or light tank was permitted to leave the squadron maintenance shop without it.

One of the troops which had suffered particularly from frontal AT fire experimented with sandbags stacked on the lower and upper slope plate on the front of the M8s as well as along the deck on either side of the driver and radio operator. A "lattice work" of thin steel sheets kept the bags in place on the front, and the weight of the bags held them firmly along the deck. The idea was similar to that used by some of the armored units on medium tanks. The result was not sat-

*Instructor, The Cavalry School.

1—Twin .30 caliber light machine guns mounted on the turret of an M8 Armored Car. 2—Bird's-eye view of the work bench installations in a half-track for radio maintenance. 3—Machine-gun jeep showing placement of extra ammunition boxes, modification of top bows, stowage of bed rolls and bags, and placement of 510 radio. 4—Rear view of gunner's compartment of M7 105mm Assault Gun showing ammunition stowage, and placement of grenades for demolition.



isfactory. While it gave additional protection to the crew, and had a beneficial morale effect, the resulting strain to axles, springs and shock absorbers, plus the general distortion of balance to the vehicle, caused abandonment of the idea.

One of the inefficiencies of the M8, it was felt, was that automatic fire could not be placed at close range on either side of the vehicle. A bow and turret gun would have been the solution. Experimentation with mounts for the bow gun was never completely satisfactory, and the stowage of ammunition was a problem never wholly solved.

Opinions differed on the caliber of the turret gun. One faction favored the .30, the other the .50 caliber. But both agreed on three fundamentals: That there should be a turret gun, that it should be mounted forward of the car commander's spot on the turret top, and that it should be mounted as low as possible. It was a foregone conclusion that the antiaircraft rôle of the gun was out. There was a third school of thought that favored twin .30 caliber MGs on the turret of the M8. As a result, the final decision—subject to the approval of the Troop CO—was left up to the individual car commander who, after all, was going to shoot the weapon. Each car, however, had a turret gun of one of the approved types. (See illustration No. 1.)

The actual mounting of either gun was not difficult. The turret mount from a salvaged tank, cut down and welded to the turret, served admirably, as did the M30 or M31 pedestal mount from a jeep. (In the latter case, though, it was advisable to be prepared with a reliable explanation if Ordnance caught you hacking up good equipment.)

The biggest advantage of the .30 over the .50 caliber was the bulk of the ammunition. This was quickly solved, however, by welding ammo box racks to the outside of the turret. The danger of enemy fire igniting the boxes was disregarded in favor of accessibility; and, as a matter of fact, no boxes were ever so ignited.

Two of the reconnaissance troops crashed through with twin .50 caliber MG mounts for use on the M20 Armored Car as CP protection. The ammunition was carried in racks which were welded to the side of the hull above the deck. This worked reasonably well, except that rapid rotation of the guns was somewhat difficult, and the weight of the double guns was a strain on the skate and ring.

The ring mount for the turret of the M8 Armored Car was not used by the members of the squadron. We

preferred the stationary mount, as described above; but it should be pointed out that we did not have much opportunity to experiment or work with the authorized ring mount.

Half-tracks:

The squadron use of the half-tracks was somewhat varied. Squadron headquarters, assault gun and tank troops used them pretty much as per TO/E. The reconnaissance troops differed.

Troop C used them with the platoons—one as CP vehicle, and one with motor maintenance. This worked well.

Troops A and B thought them awkward and ungainly, unusable cross-country, and difficult to turn around in an emergency. There also was seldom enough personnel available to crew them properly. As a result they were used as follows:

Troop A: one as a troop CP vehicle; one as a troop supply vehicle; one as a motor maintenance vehicle fitted with welder, compressor, work benches, etc.; one as a general purpose vehicle for hauling ammunition to the platoons and for general drayage.

Troop B: one as a troop CP vehicle; one as radio maintenance vehicle fitted with work benches, tool racks, etc., for rear and emergency repair work (See illustration Number 2.); one as a motor maintenance vehicle fitted with work bench, welder, compressor, etc.; one to carry the one 81mm mortar and ammunition, and two barrack bags per section containing extra clothing for the personnel in excess of that which was carried on their vehicles.

The ¼-ton, 4x4 (jeep):

All jeeps were sandbagged at the front and back. This reduced the speed and shortened the life of the vehicle but gave it protection against mines.

One of the biggest problems with jeeps is the stowage of personal luggage in such a manner that room will be left for the necessary fighting equipment. Some units welded cages or racks onto the rear, others strapped the bedrolls and musette bags on the hood. In our case, we modified the top bows so that they did not lie flat around the rear body when collapsed, but hung about six inches above the rear tire and spare gas cans. The holding device, normally located on the outside of the body just back from the doorway, was moved to the rear about 15 inches and set at an angle. When the forward ends of the bows were set in the holding clamp, they hung high. The three musette bags were hung on the top of the bows, and bedrolls strapped either before or behind them. Thus the interior of the vehicle was left free from personal gear. (See illustration No. 3.)

In the machine-gun jeeps, the ammunition boxes were stowed along the left wheel housing and on the sandbags on the floor of the back seat, their weight holding them in place. A strip of angle iron along the inside edge of the wheel housing kept the boxes from slipping off.

The 60mm mortar jeeps (we had nine 60s per troop and an 81mm in addition) carried the mortar lashed by straps and D rings to a wooden block on the left rear wheel housing. The sight was carried in the glove compartment.

Ammunition was carried in a box which was built into the rear end of the jeep and replaced the rear seat. Although large enough to carry 85 rounds, the normal load was 60. The seat padding was removed from the regular seat and fastened to the top of the box cover.

Each mortar jeep was equipped with a .30 caliber MG which was mounted on the extreme right edge of the dashboard.

The skyhook or wire cutter was mounted on the front bumper of all jeeps.

Assault Guns (105mm Howitzer, M7)

The squadron was extremely fortunate to have been authorized 105mm Howitzers, M7, in lieu of the M8 Assault Gun just prior to the invasion of Southern France. The advantages are obvious and do not need discussion here. In our opinion, they are mandatory for a cavalry squadron.

The 105s were used in battery, indirect, except on the rare occasions when a troop was detached from squadron control. Only once were they used in direct fire, when they were employed from a hull defilade position from a high hill, and fired down on enemy vehicles on a highway.

Modification of this piece was limited to ammunition towage. Racks of angle iron were constructed that were the length of the encased 105 shell. These were mounted on the sides of the gunner's compartment to replace those already installed. There were two racks on the left side and one on the right behind the anti-aircraft ring. Each rack held 28 rounds and made the total carried by the vehicle 116 instead of the normal 69. (See illustration No. 4.)

Radio and Communication

It is doubtful whether any two units in the entire United States Army ever had similar communication systems. Each adapted its equipment to the missions it received, or according to the pet theories of its responsible officers. It is reasonable to assume that one set-up worked as well as another.

In the 117th Cavalry, the major communication items of interest follow:

Each troop CP had a command half-track in which was installed a SCR 193 and a SCR 508. Each radio was equipped with remote control facilities so that radio rooms could be set up indoors.

Each troop in the squadron had a jeep in which was mounted a SCR 193. This provided long-range communication when personnel was dismounted, and carried the radio over "jeepable" terrain, which for one reason or another was impassable for armored cars or half-tracks.

We were extremely fortunate in being able to draw

enough extra radios to equip every jeep in the reconnaissance troops, except those noted above, with a SCR 510. This arrangement proved of immeasurable value, particularly during dismounted defensive operations when it gave each gun position communication with the entire troop line. The portable "back-pack," described in THE CAVALRY JOURNAL several years ago, was used by some of the platoons; others preferred the German "back-pack" with slight modifications.

The installation of the SCR 510 in the jeep is shown in illustration No. 3. In another instance, the men varied the procedure and installed the antenna on the outside of the vehicle. This was the only vehicle so arranged. The radio was mounted on the right rear wheel housing, the long axis of the set parallel with the axis of the car. This placed the controls to the front, where they were convenient for the car commander. The mount issued by the Signal Corps (FT-420 bracket) was discarded because it extended out into the interior and back, and took up too much room.

The antenna base was modified so that it fitted into the right tool box behind the rear wheel, where it was bolted to the outside of the vehicle. The tool box cover was removed. This kept the antenna mount on the inside of the car so that it could not be ripped off or damaged by trees or heavy brush. The battery pack for dismounted use was kept under the right front seat and was strapped to the bottom of the seat.

SOP FOR DEMOLITION

Every vehicle in the squadron was equipped for demolition. Thermite grenades were installed on or near the engine where they could be ignited when necessary. A thermite grenade was fastened near all gas tank caps, conveniently placed to be dropped in the tank. Three one-pound blocks of TNT were kept in vehicles with caps handily placed but safely wrapped. All similar type vehicles were equipped in an identical manner. All car crews were schooled in destruction of vehicles and equipment. Demolitions were put in place on crankcases, etc., when vehicles were used in defensive, static positions—just in case. (See illustration No. 4.)

CAMOUFLAGE

For operations in snow, armored cars and jeeps were whitewashed. Crews wore the white linings of their parkas, or mattress covers which had been cut like burnooses. In Africa, the squadrons' tanks were painted light tan and splotched with green to blend with the terrain.

Up until the last two or three months of the European campaign, the armored cars of the squadron were equipped with SCR 508s, and the old SCR 193 transmitter with the 312 receiver. This was done for a number of reasons. Primarily, it was a result of the initial issue of sets, which were SCR 193s, the SCR 506 not then being available. The operators were trained on the SCR 193, and the entire squadron was schooled in the use of these sets until they became thoroughly familiar with their capabilities and limitations. The installation of the SCR 193 required a rearrangement of the ammunition stowage within the vehicle, and after the new set-up was approved, it was considered superior to the old.

The SCR 506 became available to the squadron during an active phase of the war. At such a time, it was not believed advisable to take time out to substitute it for the SCR 193 and retrain operators since this would reduce the efficiency of the unit. Training, insofar as it was possible, however, was initiated on the SCR 506, and during the last few months of combat the M8s which came in as replacements and which were equipped with the SCR 506 were not changed.

AIR-GROUND LIAISON

One of the most interesting communication set-ups was the communication radio link with the observation cub planes. During the entire Continental phase of the war, the squadron had one or two L5s or cubs assigned or attached, and the benefits were many.

The planes were equipped with a SCR 610, and one channel was linked with channel 10 in every armored car in the squadron as well as with each troop CP. One cub was usually in the air. And when the reconnaissance platoon or section ran into trouble—since it was already in communication with the cub—it simply requested the cub to reconnoiter the area ahead and inform it of the situation. If the situation warranted artillery fire, the cub reported this to the platoon or section and suggested artillery fire. The cub would then request direct fire from "E" troop (which was on the same channel), and adjusted the fire until the objective was reduced.

At the conclusion of the fire, the platoon or section was all set to go, since it had been listening to the fire directions. It then moved on the objective, continuing its mission. Because the troop CPs were listening, the troop CO also was kept informed of the situation, and considerable time was saved by avoiding delay, requesting permission, and repetitions.

Priority was set for missions of the cub by a policy of "first come, first served"; or, in case missions conflicted, by the tactical situation; and finally, if conflict still existed, by squadron or by the plane itself. Often the cub was able to cover two missions simultaneously.

When the cub took off from either the squadron strip (any field close to the CP) or the corps' field, squadron notified all troops to contact it. This word was passed down to platoon and in turn to the sections. Tight discipline was necessary on the net, which was a free net, but strangely enough, there was little or no confusion.

In addition to the above set-up, the plane was equipped with VHF radio communication to Corps HQ, where a flight of P47s stood by. If the cub sighted a target which required bombing or strafing (provided it had priority over other such missions) it notified the

P47s of the mission and when they arrived, indicated the target by diving, etc. The cub remained to watch the operation, and kept a weather eye open for other targets, or hostile aircraft.

Somewhat the same arrangement was in effect with "E" Troop. Each armored car and tank had one channel that linked it with the FDC of the 105s. Each troop CP was in this net. When a platoon or section ran into difficulty and required artillery support, it reported this to the troop CP. Clearance was secured either at the CP or from squadron. When permission was granted, the platoon or section contacted "E" direct, and requested and adjusted the fire. The troop CP merely monitored in order to keep abreast of the situation.

The platoon NCOs were trained in forward observation and probably directed as much artillery fire as the FOs sent up by the artillery troop.

An inestimable amount of time and trouble was eliminated by making it possible for the section or platoon to deal directly with the guns.

Each armored car and M20 was equipped with a SCR 508, and this made it possible to tie-in everyone with radio communication. The 10 push-buttons were broken down somewhat as follows: No. 1—squadron net, including all troop CPs and squadron rear. No. 2—A Troop net. No. 3—B Troop net. No. 4—C Troop net. No. 5—"E" Troop net. No. 6—F Company net. No. 7—1st platoon of each troop independently. No. 8—2d platoon of each troop independently. No. 9—3d platoon of each troop independently. No. 10—air-ground liaison.

The arrangement made it possible for every armored car to talk with any other armored car in the squadron by merely pushing the corresponding button. It reduced the necessity for changing frequencies when attaching tank platoons or other platoons to each other. It meant a variety of channels for communication with all other stations, and when a section was operating separately, it meant that it always had direct radio communication with either the troop CPs or squadron. It gave direct communication with cubs and assault guns, and with flanking units within the squadron. It made possible a quick and efficient relaying of information over long distances. It gave range and great flexibility to every large set.

Supply

Rations:

When possible, hot meals were served the platoons. In Headquarters and AG troop this was not difficult, but in the reconnaissance troops the problem was more complicated. When they could, the platoons sent a jeep to the troop CP, and the kitchen supplied each man with his meal in hot food containers; coffee was sent up in five-gallon water cans wrapped with heavy paper and burlap. Sometimes the food was carried for several hours before there was an opportunity to eat it. If the platoons could not spare a jeep, sometimes the troop CP M20 or M8 took the food to them.

Each armored car in the reconnaissance platoons and each two tanks in the tank troop carried a case of 10-in-1 rations to be eaten only on command of the troop CO. In one reconnaissance troop these rations were carried on the right front fender of the M8 in a rack made of angle iron.

The troop kitchen had on hand a full day C rations and occasionally a full day's 10-in-1 plus B rations.

The mess sergeant, who had a jeep, was encouraged to forage to fill-in the issue-meals with fresh vegetables and meats.

Tank platoons attached to the reconnaissance platoons usually were supplied with meals by the tank troop unless it was too difficult. This eliminated the necessity of constantly changing mess records and ration issue and was endorsed by the reconnaissance troop 60s and the tankers.

Fuel and ammunition:

Each reconnaissance troop had an armored trailer which was towed by the executive's M20 armored car and was kept at the troop CP. This trailer carried a full load of ammunition for the tanks attached to the troops. When the platoon with tanks attached went into action and there were indications of prolonged firing, the trailer was dispatched to the scene where it was readily available for immediate resupply of the tanks. At the same time, a call was sent back to Squadron S-4 for another supply of ammunition for the trailer. This method prevented the tanks from exhausting all their ammunition because before the trailers were emptied the S-4 truck had arrived with another load.

Each reconnaissance troop was given a 6x6 for transporting a base or fraction load of ammunition and gasoline in addition to its normal troop-supply load. It was realized that it was an infraction of safety regulations to carry gasoline and ammunition on the same truck, but even so the convenience of having extra fuel and ammunition handy was worth the risk. Incidentally, not one truck was ever lost or hit.

Under normal conditions, the troop CP was supplied daily by S-4, and the ammunition and gasoline was carried by the troop 6x6. When the platoons began to run low on gasoline, ammunition or oil, they were supplied from the extra 6x6 either directly, if feasible, or by sending the supply forward in a half-track. The value, convenience and efficiency of this arrangement is immediately apparent.

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Mechanized Cavalry Operations

CAMPAIGNS in Western Europe proved the doctrine of "sneaking and peeping" by reconnaissance units to be unsound. Cavalry units had to fight to obtain information. Organization and equipment of mechanized cavalry based solely on requirements for reconnaissance missions was proved to be equally unsound. Both cavalry groups and squadrons were handicapped in the performance of their assigned missions because of lack of organic strength and firepower.

Mechanized cavalry accomplished the following assigned missions over the period covered by this report:

1. Dismounted attack of an important terrain feature.
2. Dismounted attack in a zone.
3. Seizing and holding a town or communications center.
4. Counter-reconnaissance, screening and blocking.
5. Filling a gap and maintaining contact between divisions, corps, and armies.
6. Pursuit.
7. Covering force and rear guard.
8. Defense of wide sectors of the Siegfried Line.
9. Reconnaissance in force.
10. Patrolling and mopping-up of an area.
11. Reconnaissance of routes and bridges including seizure and holding them.
12. Offensive operation in the enemy rear area.

Reinforcement of cavalry units with motorized infantry, tank destroyers, artillery, engineers and tanks was required for accomplishment of most combat missions. Such attachment permitted units to brush aside enemy resistance and push rapidly forward into enemy rear areas. Cavalry squadrons were the basic tactical unit. Vigorous patrolling of enemy positions convinced the enemy that our positions were held in force.

Assault gun troops were generally used in battery for indirect fire support and when artillery was available this unit was placed under the artillery commander for coordination of harassing and interdictory fires.

Mobility and speed made possible quick reduction of towns and villages by attack from the rear and by surprise.

Communication often was the key to success in moving rapidly, concentrating where resistance was weakest, by-passing heavy resistance, penetrating into rear area installations, cutting off routes of enemy withdrawal, preventing demolition of bridges, and close coordination and cooperation with fighter-bomber cover in reduction of strongpoints, neutralization of enemy armor, and scattering enemy units forming for counterattack. On August 31, 1944, when the VII Corps changed direction to the north, the 4th Cavalry Group filled the gap between First U. S. Army and Third U. S. Army, advanced on a wide front, captured Mezieres, established a bridgehead over the Meuse River, and saved a full infantry division to the corps for the decisive battle in the vicinity of Mons.

During the German counteroffensive, the 14th Cavalry Group fought a successful rear-guard action covering the enemy salient until the 7th Armored Division could be moved to that sector.

A definite need was demonstrated for the rifle trooper in cavalry organization and combat although there was no requirement for horses for mounting him. Cavalry retained its tactical importance and use, and the fact that horses were not required as a means of obtaining mobility and speed did not eliminate the necessity for troops to perform the cavalry mission. Lack of strength and firepower for combat necessitated battlefield improvisation.

The flexibility visualized in the group organization was not required; and the elimination of the regiment removed those elements of units, *esprit de corps*, history and morale which concern the preponderant part of the soldier's life, the importance of which cannot be minimized and which makes for the close association and cooperation required of cavalry on the battlefield.

A TROOP IN ATTACK

by Major James W. Cocke*

IN a daring mounted attack that utilized speed and cohesion, Troop B, 106th Cavalry, effectively employed its individual weapons to achieve surprise and reduce the strongly fortified town of Salzbach, Germany. The troop CO was Captain Tom Coolidge.

The area around Salzbach is a scarpland which borders the Main River on the east and is favorable for defense—if an attack comes from the west. A main belt of the Siegfried Line extends north and south through the town of Aschaffenburg, and runs parallel to the Main River which flows south to north through Salzbach, Obernau, and Aschaffenburg, which is the strongpoint in this area.

The 106th Cavalry Squadron, of the 106th Cavalry Group (Mecz.), at 0800 hours moved to precede the 45th Infantry Division in the division's zone (See Plate 1). The 106th Squadron then struck with speed, employing two troops abreast: Troop A on the right, or south; Troop B on the left, or north. Troop B moved swiftly to the east, advanced almost unopposed to Obernau on the Main River (Plate 1), and then quickly crossed the river south of Aschaffenburg near Obernau on a railroad bridge which had previously been found intact by the 187th Infantry Regiment of the 45th Infantry Division. The 45th Division, moving eastward, was to strike the stronghold of Aschaffenburg from the west.

It was reported to the commanding officer of Troop B that friendly patrols from the 45th Infantry Division were on the high ground to the northeast of Salzbach, but that the town itself was held by enemy of undetermined strength. Orders were received from the 106th Squadron that when the troop arrived at Obernau, it was to continue reconnaissance to the south in the direction of Salzbach. Upon arrival at Obernau, the troop commander decided to determine the enemy strength and dispositions in Salzbach by sending a dismounted patrol on reconnaissance along the railroad tracks (See Plate 2). Two light tanks (M24s) were to go through the orchard on the left of the road into "Hull Defilade," from which position they could cover by fire the movement of the patrol. Two assault guns (M8s) from Troop E were laid and adjusted on the railroad station and the western edge of Salzbach, and were to deliver fire on call of the patrol.

The dismounted patrol moved out from Obernau at about 1400 (Route shown on Plate 2), and was followed in 10 minutes by the tanks which took position in the forward edge of the orchard, as planned. The tank commander spotted a roadblock and some dismounted enemy near the edge of town. The tanks immediately opened fire at a range of 1,500 yards. The enemy near the roadblock scattered, and some fled into the woods southeast of Salzbach (See Plate 2). The tanks continued firing and demolished the roadblock. No self-propelled or antitank fire came from the enemy position; however, five minutes later enemy artillery fire, which apparently came from southeast of the town, began falling in the orchard very near the tanks. The tanks withdrew farther into the orchard to be out of enemy observation. The dismounted patrol, which now was moving along the railroad track, drew small-arms fire from near the railroad station. The patrol estimated the number of enemy at between 10 and 12 men. It withdrew under covering fire from the assault guns and reported to the troop commander.

After a consideration of the reports, the troop and squadron commander decided to make a mounted attack on Salzbach. When the tanks and assault gun observers left the orchard to return to Obernau, an enemy artillery concentration wounded several men. The town was not believed, however, to be strongly held and, since the tanks had received no antitank fire, it was felt that a rapid advance to Salzbach could be made without losses of vehicles.

The Troop B commander ordered the following order of march: Lead with two light tanks (M24s), followed by one half-track, three armored cars, one half-track, three armored cars, two more light tanks (M24s) and another half-track. As soon as the town had been secured by the assault force, the remaining troop vehicles were to be brought into the town. It was believed that more protection against enemy small-arms and artillery fire could be gained by placing all dismounted men in the armored vehicles. At this time, enemy artillery fire began falling on the road between Obernau and Salzbach.

All vehicles were stripped of gas cans and extra equipment and all automatic weapons were carefully checked. Each half-track was loaded with about seven men and the following arms: two light machine guns, two Thompson submachine guns, five rifles, and grenades. As the men in the half-tracks entered the town they were to fire on all suspected or observed enemy positions. This mounted force was to continue through the town, then dismount, reorganize quickly, and re-

*Instructor, The Cavalry School. Former CO, Troop B, 106th Cavalry Squadron.

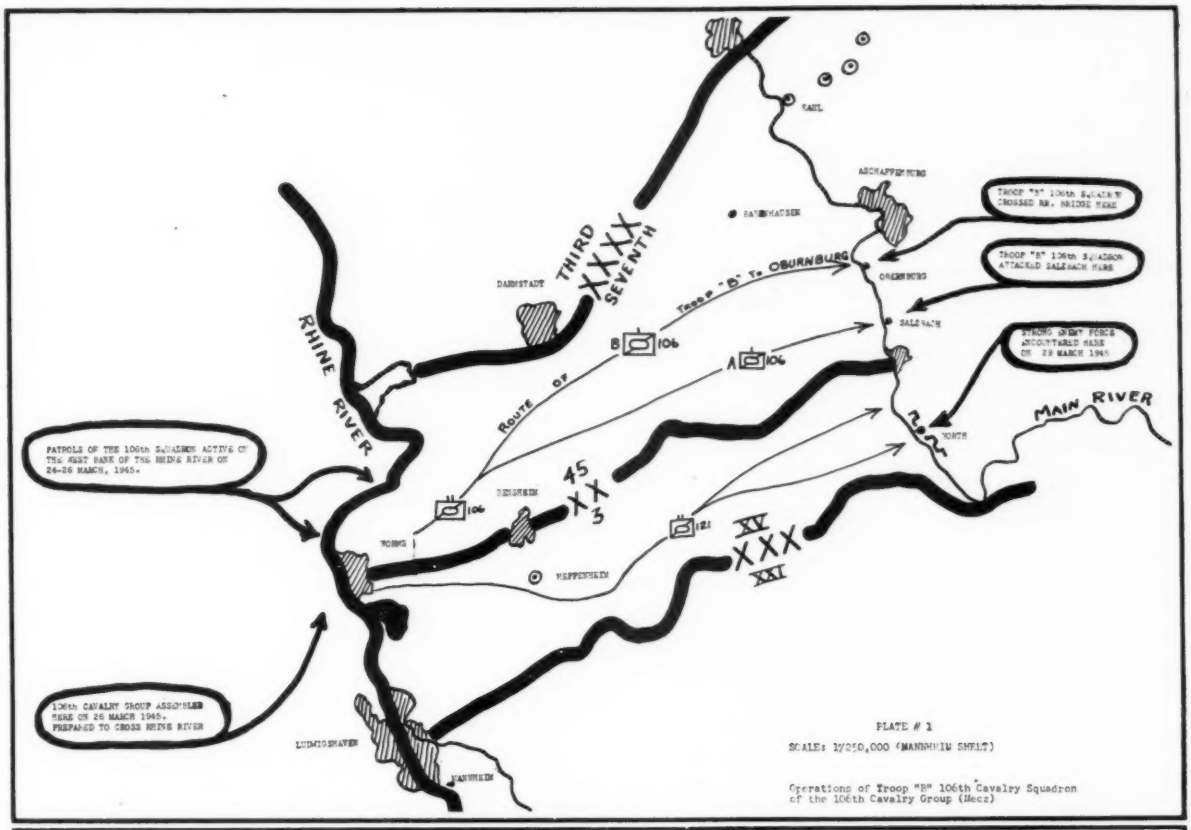
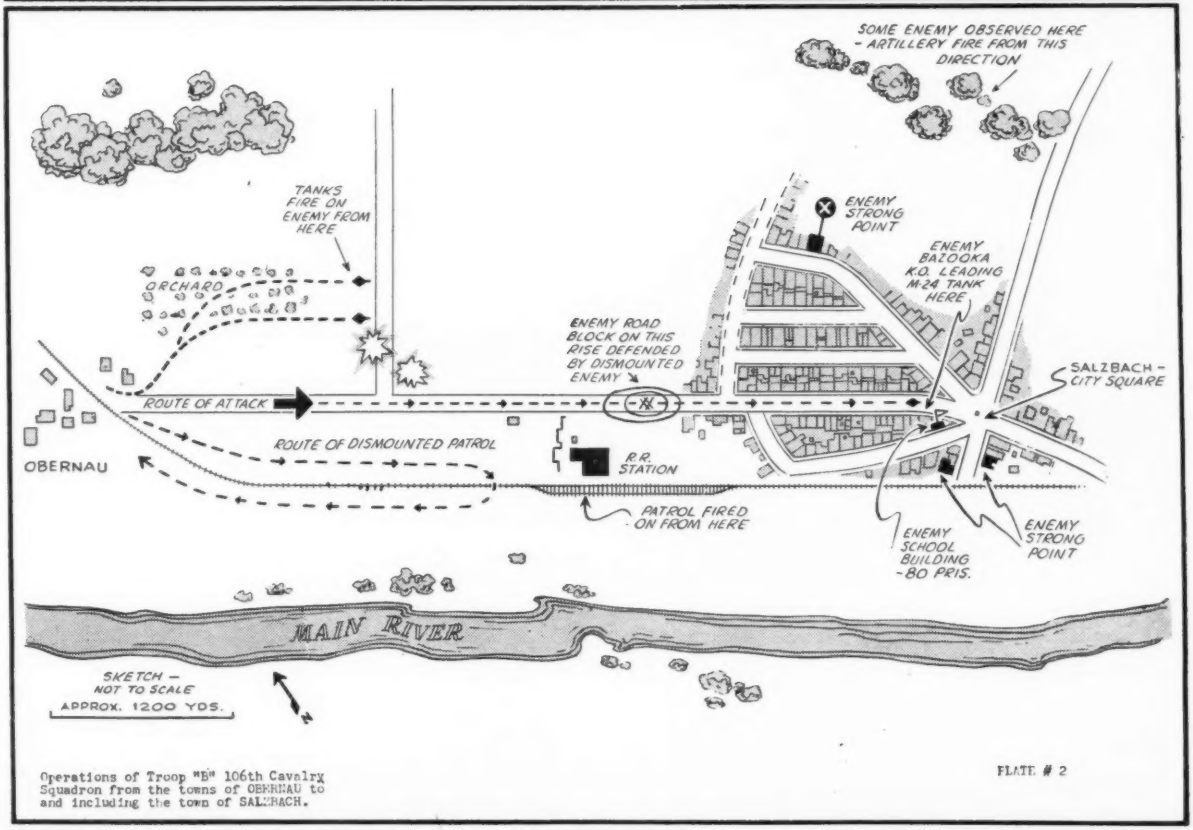


PLATE # 1

SCALE: 1/250,000 (MANNHEIM SHEET)

Operations of Troop "B" 106th Cavalry Squadron of the 106th Cavalry Group (Recr)


SOME ENEMY OBSERVED HERE - ARTILLERY FIRE FROM THIS DIRECTION
TANK'S FIRE ON ENEMY FROM HERE
ENEMY STRONG POINT
ENEMY BAZOOKA K.O. LEADING M-24 TANK HERE
ORCHARD
ENEMY ROAD BLOCK ON THIS RISE DEFENDED BY DISMOUNTED ENEMY
SALZBACH - CITY SQUARE
ROUTE OF ATTACK
ROUTE OF DISMOUNTED PATROL
OBERNAU
R.R. STATION
PATROL FIRED ON FROM HERE
ENEMY SCHOOL BUILDING - 80 PRIS.
ENEMY STRONG POINT
MAIN RIVER
SKETCH - NOT TO SCALE
APPROX. 1200 YDS.

Operations of Troop "B" 106th Cavalry Squadron from the towns of OBERNAU to and including the town of SALZBACH.

PLATE # 2

duce any resistance which might remain in the buildings.

The attack jumped off at 1600 hours. The column moved slowly through Obernau to its eastern edge, then quickly increased its speed and advanced rapidly across the open ground toward Salzbach. No enemy artillery fire fell on the column, and the two miles were covered in a few minutes. Intensive concentrations of small-arms fire were laid on the railroad station where earlier in the day the dismounted patrol had encountered the enemy in dug-in positions. The leading tank pushed aside what remained of the enemy roadblock and continued into the town, followed closely by the remainder of the column. Some small-arms fire was received from windows but was quickly neutralized by the automatic weapons fire from the half-tracks. The leading tank was fired upon by a *Panzerfaust,* apparently located in a basement near a school building. The troop commander ordered the leading half-track to pass the tank and neutralize the *Panzerfaust* position. As the half-track started around the tank it was fired upon by the *Panzerfaust* team which almost scored several hits before they were driven to cover by automatic weapons fire which was sent from the half-track. The half-track then continued through the town, but as the tank started forward again a direct hit on the turret killed the tank commander and wounded the gunner. The rest of the column continued past the spot, but were fired upon by the *Panzerfaust* team before the position was finally neutralized.

The troop arrived at the town square shortly thereafter and immediately organized dismounted parties to clear up remaining pockets of resistance. The 3d Platoon took the southern and eastern section of the town; the 2d Platoon the northern section; the western half was cleared by one section of the 1st Platoon.

One light tank and the two remaining sections of the 1st Platoon took the school building under fire from close range. When the dismounted party moved toward the building, the enemy hurled grenades which caused five casualties.

The armored car, which was outposting the town to the southeast, was harassed by enemy small-arms fire from about six or eight dug-in enemy, who in turn were kept under fire by the armored car's light machine gun. The position was finally neutralized with the aid of some dismounted men, who took 10 prisoners. The troop commander ordered the remainder of the troop, which was still in Obernau, forward to assist in the house-to-house search. When it arrived and began this task, about 80 enemy came from the school building and surrendered. A few minutes later the enemy placed a 10-minute, ineffective artillery concentration on Salzbach. A total of 150 prisoners were taken during the mopping-up phase. An undetermined number of enemy were killed and a few escaped into the woods to the east.

The situation quieted down after Troop B had organized its position for the night. Just about dark, however, one of the ¼-ton patrols was fired upon by enemy that were still in one of the houses, and two men were wounded. A dismounted party from Troop B was sent to reduce the resistance. The fight lasted only a few minutes, and after an exchange of grenades about 13 enemy surrendered. In the confusion attendant with searching the prisoners five of them escaped.

Darkness was now near, and elements of the 45th Division relieved the troop about 2300. The troop was then assembled, and on squadron order prepared for movement to the northeast.

The final objective of Troop B in the attack on Salzbach was not the houses or streets but strategic points such as railroad stations, telephone exchanges or other public utilities. Troop B attacked straight through the town to seize the important road junction, the schoolhouse and the pillboxes on the outskirts. The railroad was strongly defended by the enemy, which made it necessary to concentrate fire on that position. In this action it has been shown why all houses must be treated as "inferior" pillboxes: because most of them had basements from which the enemy had to be flushed by house-to-house action. Basements are favorable to the defender, as evidenced by the work of the *Panzerfaust* team which succeeded in knocking out the light tank.

Another point that should be noted is that buildings obscure visibility, which is further restricted by dust from the impact of projectiles or explosive charges. The point or origin of fire is very hard to locate because the report is drowned by the noise of the impact of the projectile, and because of the many points from which fire can be delivered even from a relatively small area.

Control is another facility of extreme importance in such an action. In no other form of combat, except in dense jungles, is observation as restricted as in village fighting. This condition makes centralized control by the troop commander very difficult. The small unit commander must therefore use every ounce of initiative and aggressiveness he possesses, because most of the action will be under the direction of small unit commanders. An example of this was the assignment of sections of the town to each of the platoons.

The neutralization of hostile fires is also of paramount importance. Most of the machine guns were well forward, as evidenced by the numbers and kinds of weapons used by the troops in the half-tracks. The troop commander utilized his weapons to the utmost when he directed the fire of all automatic and small arms at the railroad station, and at the known enemy positions in the windows of the town. Heavy concentrations of small-arms fire were directed at the enemy *Panzerfaust* position.

All the important points mentioned above are principles of doctrine laid down in FM 31-50, Attack of a Fortified Position and Combat in Towns.

Tanks and Infantry In Northern Luzon

Submitted by Captain Peter Marusek, 775th Tank Battalion, in a Training Memorandum

The notes on which this story is based were taken when we fought the Japanese in the mountainous terrain of Northern Luzon. Secrecy requirements prohibited their publication until now. It is interesting to observe that all of the points set down are now covered in regulations.

THESE notes are based on the combat experiences of the 775th Tank Battalion in operations in the Northern Luzon area from January through June, 1945, and are designed as a guide for future operations under the same terrain conditions. During this campaign, it was the usual thing to be confronted by situations for which there was no immediately obvious solution. A method of action could be devised to solve the problem in most cases, however, by the application of common sense. A thorough understanding between the Tank and Infantry team is a prime necessity if success is to be attained.

Terrain and Weather Conditions

Tanks were not primarily designed to operate in mountainous terrain, but notwithstanding their limitations in such terrain, they can be employed against the enemy with great and unexpected success. In spite of losing mobility and maneuverability, tanks in rugged areas gain a tremendous element of surprise and shock action.

In Northern Luzon the majority of roads are secondary, and are bordered by sheer cliffs rising or dropping abruptly from the shoulders of the roads. The roads twist sharply upgrade and downgrade, and usually follow the course of the winding rivers and streams, or circle around the sides of mountain ranges. During the rainy season, the shoulders of the roads cave away, and numerous landslides are encountered. The roads in most cases are wide enough to permit tanks to turn about, but it required four or five motions to complete such a maneuver. In many instances, bulldozers blazed a trail to enable the tanks to support the infantry by direct close-range fire from positions high atop mountains and cliffs. It was almost always impractical to assume covered or alternate firing positions.

Assignment of Tanks

In mountainous terrain, the employment of tanks in mass is impractical. The supply and maintenance problem requires that the tank units be assigned properly. The tank battalion is a normal unit of employment for an infantry division; the tank company for an infantry regiment; and the tank platoon for an infantry battalion. Any further breakdown is not feasible, but if the situation demands it, a tank company and even a tank platoon may be attached to an infantry division. For normal employment with the division reconnaissance troop, the light tank company should be under the direct control of division headquarters.

Surprise

Impassable or difficult terrain can be used to a great advantage to effect an element of surprise. In such areas, organized antitank measures are usually lacking, but hasty mine fields can be expected. The enemy had a tendency to underestimate the capabilities of our tanks under these conditions and as a last resort he employed suicidal and ambush tactics to correct his mistake. It was a wise plan not to underestimate his cunning.

Use of the Medium Tank M4

The medium tank proved more suitable than the light tank for the close support of ground troops in severe mountainous terrain. Its slow speed enabled the infantry to follow easily, and its armor and fire power enabled it to close with and neutralize or destroy the enemy. It was used extensively to lead the attack while supported closely by infantry; to support by direct fire the advance of ground troops; to accompany and assist the advance of the infantry; and, in a few instances, to supplement artillery and to feel out the enemy's defenses.

Use of the Light Tank M5A1

The light tank was found to be poorly suited for operations in mountainous terrain because of its lack of fire power and armor, and the loss of speed and maneuverability. The light tank with tank-borne infantry, however, was used satisfactorily to patrol and protect supply and communication lines; on reconnaissance and security missions around coastal plains and flanks;

and as a fast, maneuvering force to attack the enemy's flank.

Reconnaissance

The most effective means of reconnaissance in mountainous terrain was the liaison plane. Large areas that are difficult to traverse on foot can be reconnoitered quickly and effectively by plane for every possible tank approach or firing position. Every available means must be utilized to reconnoiter areas thoroughly prior to any contemplated action. Ground reconnaissance is always continuous and very important. When terrain will permit employment of only a single tank or tank section, dismounted reconnaissance is essential in selecting gun positions, and a route thereto.

Security—Assembly or Rear Areas

Tank units are responsible for their own security in the assembly area. The bivouac should be located close or adjacent to other units and the tanks should coördinate with them in the defense of the area against enemy infiltration or attack. Tanks should be placed in a circular arrangement at close intervals (five yards) with all thin-skinned vehicles in the center of the perimeter. Dismounted machine-gun outposts should be provided around the outer perimeter.

Extremely dense wooded areas should be avoided in selecting bivouac areas. When our forces have control of the air, concealment from air may be disregarded, but cover and concealment from ground observation must always be sought.

Tanks have no security while returning from the forward area and are very susceptible to ambushes and suicide attacks, and for that reason they must be released early enough to return to the assembly area before darkness. It is also imperative that sufficient time is allowed to resupply and maintain the tanks if they are to be employed the following day. In some instances it is advisable, if circumstances permit, to carry tank-borne infantry for security while returning to an assembly area over dangerous "ambush" terrain.

Security—Attack Position or Forward Area

Because of the conditions of the roads, or, as often, when tank units were compelled to operate until darkness, it was necessary to bivouac the tanks in the forward area. Under these circumstances, infantry commanders should provide adequate and complete security for tank units, whether company size or smaller. During the night, tanks should be pulled back to the forward infantry command post and placed inside the infantry perimeter. Because tanks draw heavy enemy mortar and artillery fire when they are in the forward area, the bivouac selected should have excellent cover.

Tanks normally should never be used during the night as road blocks or outposts. If possible, an antitank gun should be used for such a mission, for it was especially designed for it and is more effective than the tank. In addition, the tank crew would be denied its rest, which is essential for the next day's operation. In emergency, when there is a distinct threat of an enemy armor attack and antitank guns are not available, tanks in conjunction with infantry may be used on road blocks during the night.

Advance Guard and Main Body

No matter on what type of terrain tanks and infantry are operating, an advance guard is a necessity if the advance of the main body is expected to be uninterrupted. This is especially true if the enemy employs a delaying action and offers only sporadic resistance.

The advance guard, composed of tanks, infantry and engineers, must be employed at a safe distance where it cannot be overwhelmed before assistance from the main body can reach it. The guard's mission will be to push back and destroy small enemy parties, reconnoiter fords across rivers and streams, and to remove or by-pass mine fields and obstacles.

The size of the advance guard varies with the tactical situation, and in mountainous terrain constitutes only a small fraction of the troops. The advance guard should preferably be commanded by the tank officer, who should be directly responsible only to the main body commander for the tactical conduct of his force.

When an advance guard is employed, the remaining tanks lead the main body. The enemy is likely to allow the advance guard to pass, and then attack the advancing column with his armor, or he may employ other offensive or harassing measures. It is not advisable to have tank-borne infantry on any leading tanks in any leading column.

Coöperation in Offensive Action

A thorough understanding between tank and infantry units is a prime necessity. Every possible effort should be made for coördinated teamwork between the two arms. Mutual capabilities must be understood, and tactical suggestions by either arm should be duly considered by the other arm.

Artillery and air support can be used effectively to keep the enemy occupied and off-balance during the attack. A diversive type of action should be used whenever possible. Mountainous terrain can be easily defended by the enemy, is very difficult to seize and occupy.

Tanks in almost all phases of attack usually draw intense artillery, mortar and small-arms fire. While the fragments from such fire do little or no damage to the tanks, the richochets can cause considerable casualties to the accompanying infantry if it is not properly dispersed and in a suitable formation. The accompanying infantry should remain close enough to see the tank clearly, and yet remain within good rifle and BAR range. A tank does not provide cover for the infantry from these ricochets. A lead tank can, however, be used without accompanying infantry, provided it can receive sufficient fire support from another tank,

or is under cover of a mortar and small-arms concentration that will protect it from enemy suicidal antitank measures.

In mountainous terrain, tanks are, in almost all instances, restricted to movement on roads. The size of supporting tank units used in the attack will very seldom exceed one tank platoon. One section will be employed to lead or support the attack, while the other is held in reserve. It will usually be found that only two or three lead tanks or possibly one, can give direct fire support at one time to the infantry. Most of the time, the valleys or plateaus will offer an opportunity to employ more than one tank platoon. Every advantage should be taken of employing as many tanks at one time as the terrain permits, if the tactical situation warrants it.

In the event the terrain does not permit the use of two or more tanks, tanks for which there is close infantry protection can be used singly with good effect either as mobile or stationary pillboxes. When the enemy holds a strongly fortified entrenched position, it will be necessary to choose routes around the flanks over some usually "impassable" terrain to a high vantage point overlooking the enemy's defenses. Single tanks, if given infantry protection, can usually be placed in position where they can support by direct fire an infantry attack against a located enemy strongpoint. Tanks can be used with great success when employed as mobile or stationary pillboxes under the same existing conditions. It must always be remembered that direct tank fire is more effective than mortar or artillery fire against enemy strongpoints which are in prepared cave positions on hillsides.

Antitank Measures

When tanks operate on mountain roads that have overhanging banks they are very susceptible to attack by small enemy antitank groups. In such areas, enemy demolition squads armed with satchel charges, pole charges, thrust mines, or Molotov cocktails can frequently be expected. Overhanging banks generally provide excellent cover for an attacking squad which in most cases will be impossible to spot from the road. For this reason, it is necessary that the accompanying infantry scout out possible enemy positions atop the banks before tanks are sent below them. Many suicidal attacks also can be anticipated in almost every imaginable form, for the enemy has no regard for sacrificing lives to accomplish a special mission. And, without proper and alert infantry protection, tanks are vulnerable to such attacks.

The enemy can most of the time be expected to emplace artillery or antitank guns in caves, in draws, on a reverse slope, and occasionally in less suspected locations. He will nearly always defend passable tank terrain. Enemy gun positions will be thoroughly camouflaged, and frequently will have a very limited field of fire. The enemy's antitank discipline is excellent. Tanks usually will not be fired upon by antitank guns until they have closed to a very short range (40 to 200 yards).

Mine fields can always be looked for along roads. The mine field found was in many instances a hasty one, with no attempt by the enemy to camouflage or defend it. Organized mined areas can always be anticipated in tank approaches which lead to the enemy's main defenses, and most of them will be heavily defended by strong machine-gun emplacements. The tank gun can be used to clear hasty mine fields when they are detected, and are defended only by small-arms fire.

The enemy often formed road blocks by blowing roads away. When the entire roadbed was completely blown apart and no by-pass was available, this type of road block was highly successful, and was simple to effect. The enemy usually did not defend it.

Emplaced enemy tanks were found serving dual use as an antitank gun and a pillbox. They could generally be expected in mass, and heavily entrenched. The enemy avoided open tank action except on purely suicidal attempts.

The enemy many times set up strongly prepared ambush positions. These were located in densely wooded sectors of road and stream crossings that were likely avenues of armored approach, and were supported by antitank weapons and machine guns. Infantry troops, with tanks in position to support them by fire, should search out such spots. The infantry's reconnaissance should be preceded by an artillery preparation if possible.

When tanks move alone from one locale to another through wooded or mountainous terrain, local security should be established immediately when halts are made by one tank or the entire column.

Target Designation

Tanks are dependent to a great extent on the infantry to indicate enemy targets. A tank that is buttoned up is blind. A tank phone, colored smoke, radio, tracer or white phosphorus grenades should be used for target designation. Prearranged signals should be agreed upon between the infantry and tanks to simplify the procedure for target designation. Colored smoke signals should be changed daily. The enemy often confused our troops by using our smoke grenades.

Tank-Infantry Communication

Without radio communication, tank-infantry coördination would be difficult to maintain. Each tank should be equipped with a field phone to supplement tank-infantry radio communications. From our experience to date, the most satisfactory tank-infantry communication arrangement is for every tank to have an AN/VRC-3 radio to supplement the SCR 508 series.

Experiments are being conducted on installing the SCR 694 in tanks to net with the SCR 536.

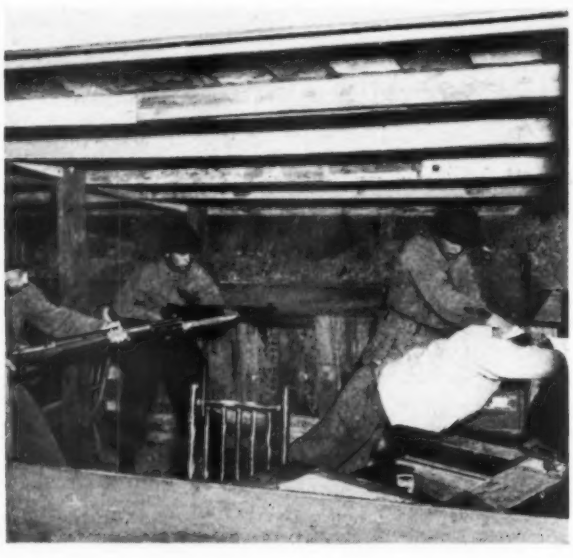
TRAINEE--1946

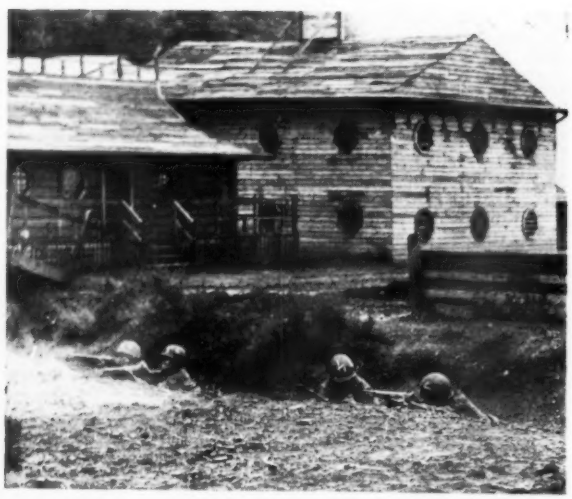
Prepared Under the Direction of the Commanding General, Replacement Training Center, Fort Knox, Kentucky

On April 1, 1946, the Armored Replacement Training Center officially became the "Replacement Training Center, Fort Knox, Kentucky." Actually it became the "Mounted Training Center" because to it are sent trainees for armored cavalry, field artillery and the cannon and anti-tank elements of infantry, all of whom are to serve in mounted units.

THIS article will present an orientation on the present mission of the RTC, and a prophecy for the future. By the time these lines are read, the organization and training policies of the postwar army may be more definitely known. Some of the predictions made here, therefore, may not be borne out.

A soldier enacts the part of a civilian as others undergo realistic training at Fort Knox for occupation duty.





Training for occupation duty is complete: here soldiers cover a searching party. Note Japanese "buildings."

Recruits may be turned into soldiers by either of two methods: at a training center prior to assignment to units—as has been the practice in wartime; or in recruit squads within their units, when assigned directly from reception centers or recruiting stations—as in peacetime. Obviously a unit in combat has neither the time

a MODEL

nor facility to give basic training. Although both time and facilities for such training are available to all units now, it is not believed desirable for troops on occupation duty to be charged with the training of recruits. Further, in peacetime there is much to be said in all cases for the continuance of centralized basic training. Therefore we shall assume in the discussion which follows that the replacement training center is a permanent institution.

When the over-rapid demobilization of our overseas garrisons in early 1946 demanded a faster flow of replacements, basic training was cut from 17 weeks to its present 8 weeks. Although trainees are given branch instruction, specialization within branch is eliminated. Instruction is basic in a literal sense, although it has not been made branch immaterial.

The mission of the training center is to graduate a "basic" private who is capable of taking his place in a squad or crew of a combat unit of his branch that is engaged in occupation duty. The center does not train noncommissioned officers, leaders or specialists. It does train all men in squad or crew positions below that of leader. The qualifications of the graduate are more specifically, in the order of their priority, as follows:

A well-disciplined soldier.

A qualified marksman with the rifle (carbine for field artillery).

A qualified assistant driver of 2¼-ton truck and basic combat vehicle (qualified driver as far as practicable).

A qualified gun squad or crew member of his basic crew weapon (105mm, 90mm, 76mm, or 37mm gun) to include familiarization with duties of gunner.

Familiar with his T/O individual arm.

Familiar with the caliber .30 machine gun.

Familiar with the duties of a private on occupation; bayonet, tear gas, search of buildings and individuals, riot formations, traffic control, guard duty, etc.

Familiar with simple field duties.

All familiarization courses include use of service ammunition.

It is believed from experience that the above qualifications can be achieved by the recruit in eight weeks. The commander in the field cannot expect an expert combat driver, a qualified gunner, a radio operator, a cook or a mechanic. Neither can he expect a hardened field soldier. But he can expect a good "basic" private —one whom he can, without hesitation, place in a combat squad.

At the Fort Knox center, armored cavalrymen are trained on the M4 tank with 76mm gun, or the armored car; infantrymen are trained on the M45 tank (cannon) or the M26 (antitank); and field artillerymen on the towed 105mm howitzer. Training methods are a combination of centralized and decentralized training, with the trend toward the latter. As the cadre percentage of regular army men increases and brings an increase in more capable instructors, it becomes more practicable to decentralize instruction and give increased attention to the individual trainee. The instruction of small groups means more "do" and less "talk," and results in turning out a trainee who has actually done it, not just seen it done—or, as the expression goes, has been "exposed to so much instruction."

The Training Center exists solely to serve the units

Above, a front and rear view of a problem as carried out at the Center which shows the 1946-trainee how to deal with a mob. The demonstration shows the effect of "the organized few" on the "disorganized many."

in the field.. Suggestions from field commanders are therefore welcome. Suggestions to field commanders are:

Check to see that the trainee you get is in the type of unit for which he was trained. The man trained for a cannon company is not a rifleman—although he has qualified with the rifle. The mechanized cavalryman is not a tank driver—he is an armored car driver.

Check to see that the trainee's records include a "Form No. 1" which shows the subjects in which he has qualified.

Don't expect a specialist or a well-trained field soldier.

Do expect a well-disciplined "basic" private, who is perfectly capable of taking his place in a line gun squad or crew, who can drive his basic vehicle, and shoot his crew and individual weapon.

As an example of the current instruction being given to prepare a trainee for occupation duties, there follows a description of the course in Civil Affairs.

In keeping with the Center's mission, the Civil Affairs Committee prepares the recruit for service with units engaged in occupation duty by giving him an introduction to the duties he, as private, may expect to perform when he joins such a unit. In addition to familiar instruction he receives as a member of an infantry, artillery, or tank squad or crew, he takes part in an eight-hour course in the technique of seizure and search, traffic control, riot duty and other matters that daily confront the occupation soldier.

Training is conducted by the "country fair" system for groups which average less than 40 men. Emphasis is placed on the individual's participation in the training, and on the necessity for a soldierly bearing when dealing with civilian personnel in occupied countries.

A carefully rehearsed skit in which two soldiers search a "suspect" in his room opens the instruction in this subject. While the group looks on, the instructor keeps up a running commentary as the action unfolds. The soldiers enter the room, inform the "suspect" of the authority for the search, then search him for weapons. While one soldier guards him the other carefully searches the room and its furnishings, and uncovers weapons, explosives, contraband, and other suspicious items. These are listed for the suspected man's signature. Then, as the soldiers relax their vigilance, the "suspect" snaps out a concealed pistol, "killing" them both. In the critique this, and other planned mistakes, are discussed to drive home the necessity of care and caution in all searches. Trainees then practice guarding and searching each other for contraband which has been previously hidden by the instructor.

Following the skit, the instructor defines restraint and custody, and demonstrates the right and wrong way to approach, arrest, and control prisoners when using military weapons. This is followed by guarding arrested persons, during which the coach and pupil method is employed.

The class on traffic control includes the demonstration and practice of hand signals by a driver, coupled with correct daylight and night traffic control signals by an MP. When the group has learned these signals, it is divided into subgroups and at prepared street intersections each man practices controlling traffic as other recruits act as "vehicles" and approach the intersection.

A review of gas mask drill, and a test of the effectiveness of the mask against tear gas, opens the period on the use of chemical agents in riot duty. A discussion is given on the use of chemicals against mobs, which covers the methods of firing, tactical use, and physiological and psychological effects. This is followed by a problem in which smoke, tear gas, Adamsite, and white phosphorus are used, and in which recruits take part on the "sending" and "receiving" end. Each recruit throws one tear gas hand grenade during the instruction.

Bayonet training emphasizes the use of the weapon in riot duty rather than in battle. Artillerymen use the carbine bayonet, all others the rifle. It is assumed that guard duty in occupied areas will be conducted by personnel whose bayonets are fixed, and that police patrols bent on search, seizure and arrest will fix bayonets. A simple drill to meet this requirement is practiced. Fixed bayonets are carried in all civil affairs instruction except traffic control.

Squad and platoon riot drill is conducted with bayonets which are fixed and bared. Throughout the drill, emphasis is placed on precise movements, soldierly bearing, and a steady and determined manner in the execution of all formations. The object is to impress the recruit with the psychological effect that "the organized few" have on "the disorganized many." Instructions include the "when" of firing, the care and recovery of wounded, and the seizure and disposition of the key agitators in a mob. Recruits alternately take the part of both riot squad and mob.

For instruction in house-to-house seizure and search against armed resistance, the group is divided into five "waves" which are conducted on a "tactical" walk through the village. During the walk a picked team demonstrates as the instructor describes and explains the following: the organization of the wave into search and support parties; fire and movement; firing from a window; and the seizure and arrest of occupants and persons who resist. Each wave is then conducted through a similar course and required to negotiate the same obstacles and solve the same problems met by the demonstrating team. Concurrent with house-to-house search, instruction is given on methods and techniques of saboteurs, featuring likely targets such as power plants, industries, food supplies, communication lines, and military installations. A display of instruments and explosives which might be used is shown.

Organizations receiving replacements from this Center can expect that, in the foregoing aspects of occupation duty, a sound basis for additional training has been made by the Civil Affairs Committee.

ARTC's Contribution to Victory

by Captain Harold W. Keyser, Cavalry

THE power and striking force of the armored troops, which contributed heavily to victory in both theaters, can be traced in a large measure to the training provided by the Replacement Training Center at Fort Knox, Kentucky. This was the nation's only training center for replacements for the men who fought and directed the armored vehicles on the world's battlefronts.

Even before the war, the necessity for a definite training for the special troops required to handle the highly technical equipment of the Armored Forces had been recognized. The first steps toward the organization of a centralized training set-up for these men were taken in October, 1940. It was designed primarily to give basic training to filler replacements for the newly born and rapidly expanding Armored Force.

The Center embodied many innovations in training techniques, and encountered many of the same problems experienced by any new army training camp. Its original cadre was drawn from the 1st and 2d Armored divisions, and was supplemented by Regular Army and Reserve officers who were particularly qualified as instructors.

Operation was begun in the last week in February, 1941, when the first trainees arrived at the Center. The T/O at that time called for 36 companies of 220 trainees each, which were organized into battalions of three companies, and into Groups of four battalions.

Eleven weeks after the arrival of the first increment, the Center was handling the training of 5,431 enlisted men for duty with the existing armored units, and those in the process of formation.

Two phases made up the original training program: The initial phase, handled by the various companies under battalion supervision, and including all basic subjects; and the second phase comprising the more advanced technical subjects peculiar to the needs of the Armored Force. Upon completion of the latter, many of the enrollees went to the specialist schools in tank maintenance, communications, etc.

Because of the highly technical nature of the work involved in the operation of the Armored Force equipment, efforts were made to establish a minimum mental standard for trainees, and to obtain men with at least a high school education. The heavy demand for this type of man by other branches, particularly the Air Force, precluded the realization of this effort by the ARTC, but the results obtained with the men assigned were highly satisfactory.

A major problem during the early stages was the difficulty of obtaining necessary equipment for training. No tanks were available and the trainees were instructed in driving and gunnery on borrowed tanks. Only 10 to 12 tanks per day were available, and men were forced to wait a long time before their turn came for driving practice.

Major changes in the original training set-up were made during the summer of 1941. The training of auxiliary troops—such as armored, infantry, signal, quartermaster, medical, engineers, and ordnance—was taken over by the regularly established replacements centers in other parts of the country, and the ARTC began training armored units only.

To the original two Groups, a third was added in October, 1941, to train replacements for reconnaissance, assault gun and mortar companies.

An additional course was included in the operations of the Center in the fall of 1941 with the inauguration of the Officers' Orientation School. The purpose of the school was to introduce newly assigned officers to the tactics and technique of the Armored Force. Early sessions of the course were beset with difficulties as may be gathered from a request submitted by the G-3 of Armored Force to G-4 for one medium tank for exhibit to officers in the orientation course. The request stated, in substance . . . "It is not expected to give any driving or firing instruction, but the officers should at least see the medium tank, M3, prior to joining tactical units."

The first class of this orientation school was graduated in November, 1941, and the classes continued until February, 1943, by which time practically all newly assigned officers had armored force backgrounds and it was felt that the necessity for the school therefore no longer existed.

When the United States entered the war, 7,469 men were undergoing training at the Center on a 13-week basis. Speed was needed and the War Department ordered a reduction of the training time to 8 weeks. This plan was abandoned when it was determined that the quality of the training was materially reduced by the cut.

A material increase in the amount of training equipment soon made an advance in training efficiency possible. Field training was increased. Road marches were longer, and additional experience was given the men in entering and leaving bivouac areas after dark, as well as in night blackout driving.

In 1942, lessons gained in combat in Africa were applied. Increased time was given to the physical hardening of men, and more emphasis was placed on land navigation, mines, booby traps, and night operations. The number of specialist classes in the Center was reduced, and all trainees were required to complete the seven-week basic course before acceptance for specialists' training.

The committee method of training, with specialized teams of instructors handling instruction in the various technical subjects, was adopted by the Center.

By the end of 1943, the training program had been broken down into five major categories: 1. Subjects taught under company or battalion direction. 2. Small arms, taught by the weapons department. 3. Heavy weapons, by the Center Gunnery Department. 4. Driving and maintenance, by the Vehicle Department. 5. Map reading, sanitation, first aid, communications, and tactical training of the individual soldier including special battle courses, taught by the General Subjects Department. The only specialist school retained was the Bakers' and Cooks' school.

Battle indoctrination courses were set up using live ammunition rather than the "canned" noises formerly used. The original one-week battle training course was divided into six phases, including Combat Driving, Tank Crew Training, Tank Crew Firing, Close Combat Firing, Booby Traps, Grenades, Reconnaissance and Miscellaneous Training which included instruction in field expedients, infiltration and obstacle courses.

The trainees were moved into bivouac for this phase of their instruction, and spent the entire period living and operating under field conditions. A "Nazi" platoon gave realism in all problems, and raided the bivouac areas in "attacks." Operations also included construction of booby traps and surprise gas attacks to promote the alertness of the trainees under all phases of combat training.

Opening phases of the battle for Europe during the last half of 1943 brought no major changes in the tactics and uses of armor. Limited use of the armored vehicle in the Sicilian and early Italian campaigns showed only one weakness in the ARTC's program—a deficiency in night operations, which was promptly corrected with an increase in night work. The Center's program was found to be well balanced and practical.

By the closing months of 1943, more than 98,000 trained replacements had been turned out.

The fighting in Normandy brought, for the first time, large combination tank-infantry operations. This matter had been a source of continual study from the beginning, and its practical application in combat was instantly recognized. A further change in the Center's training program was instituted to cover this phase in August, 1944, in a course designed to give each trainee the fundamentals of all branches of the service.

Because of the heavy demand for replacements, an expansion program for the ARTC was set into motion at the close of 1944. The new program was designed to add two full regiments to the capacity of the Center.

Losses in the heavy fighting along the German frontiers brought demands for replacements to a peak, and in a move to offset the shortage of trained armored personnel it was decided to convert personnel from other branches into tankers. Originally it was planned to convert six battalions of infantry trainees who had completed their six weeks of basic at an IRTC. This plan was changed when the inactivation of several tank destroyers, airborne and cavalry reconnaissance units was ordered, and their personnel shipped to Fort Knox for conversion into tank crewmen. Some 5,000 men were converted from other branches in this phase of the program.

Trainee number 150,000 was graduated from the ARTC during the week of February 19, 1945. The major portion of these men had been shipped to the European Theater. Tank outfits in the Pacific area, however, were operating with men who had received their training at the Fort Knox center.

As the heavy fighting died down in Germany, training schedules at the ARTC were modified and by the time of the German surrender the Center's program was already well organized in the instruction of the different techniques of fighting which characterized Pacific warfare. Size of the training companies was reduced at this time to 200 men per company, with a resultant increase in efficiency.

Gunnery courses were altered to fit the reduced range requirements and methods of the Asiatic fighting, while village fighting courses were also changed to conform with the altered tactical methods of the Japanese.

With the end of hostilities in the Pacific Theater, wide modifications were made, among which were new phases of instruction to prepare the men for occupational duties, with emphasis on civil affairs and control rather than on combat training.

Major General Robert W. Grow assumed command of the Center on February 28, 1946. General Grow came to the Center from the 6th Armored Division which he commanded in the European fighting. Further changes were made in March, 1946, to accommodate additional units. These included a reversion to part of the original plan for the Center, and called for the training of mechanized cavalry, field artillery, and infantry as well as armored troops. The name of the Armored Replacement Training Center was changed on April 1, 1946, to the Replacement Training Center. The new set-up called for a Center headquarters and four regiments consisting of 28 battalions or squadrons and 75 companies, batteries or troops. Under this plan the Center is concerned with the training of mounted crews for all types of combat vehicles.

During the period of operation of the Armored Replacement Training Center, the organization at Fort Knox turned out a total of 200,261 men. These went out not only as replacements for combat units, but also aided in a large measure to fill armored divisions of the army while these were in the process of organization in the United States.

The Interphone System in Armored Vehicles

*by 1st Lieutenant John F. Horan, Infantry**

Evolution of the Interphone System

BEFORE 1938, a tank driver's back was sore and bruised after each day's operation. All signals to the driver from the tank commander, who sat behind him, were made by the commander's foot. If the commander wanted the tank to move forward, he tapped his foot against the driver's back. To move faster, the tapping was increased in tempo. To turn right or left, the foot was put either on the right or left shoulder. To back, it was pressed against the driver's neck or head. To stop or slow down, a steady pressure was used against the back of the driver.

Realizing the inefficiency of this method of communication, The Infantry Board and The Mechanized Cavalry Board, began experiments to improve it. In 1938, the first interphone communication equipment, incorporating amplification, was designed exclusively for use in tanks and other armored vehicles. The equipment was designed by the Signal Corps laboratories, and in the fall of 1938 was mounted in the M2A2 light tanks of Company E, 66th Infantry Regiment (Light) at the request of The Infantry Board. The tank crew consisted of four men: commander, turret gunner, driver, and radio-operator bow-gunner. This system allowed one-way communication from the tank commander to driver, and from commander to turret gunner; and two-way communication from the tank commander to radio operator. The interphone amplifier was a separate component, and not part of the radio set. The radio sets which were installed in the tanks for the experiment were SCR 193s and SCR 245s. No provision was made for the remote operation of the radio by the tank commander.

The interphone system later was wired to the radio through a junction box and modified to permit the tank commander to operate the radio remotely through the interphone system. At this time, microphone jacks were installed at each position in order to make possible a two-way communication with all members of the crew. Transmission over the radio by the tank commander would not disrupt the interphone system because the interphone communication between other members of the tank crew was still possible.

The basic interphone system of World War II vehicles consisted of one interphone box (BC-606) for each member of the tank crew, and some means of amplification, either as an integral part of the vehicular radio set, as in the SCR 508 and SCR 608 series, or as a separate component, as in the RC-00 or BC 605. Provisions also were made for the operation of the radio from the tank commander's position in the turret.

In the Normandy campaign, it was desirable for the tank commander to communicate with the infantry squad following the tank. Many field expedients were used, from dragging-wire with a telephone on each end, to an elaborate hookup of interphone boxes wired to the tank interphone system. In 1944, a modification work order was issued which standardized the method of external tank-to-ground interphone communication, and which has been incorporated as an integral part of the tank interphone system. At the same time, the use of the individual radio-interphone selector switches was eliminated, and the tank commander's selector switch was spring-loaded, so that when no pressure was applied to the switch it automatically returned to the interphone position. In cases of emergency, a break-in operation by a member of the tank crew is accomplished by his merely pressing the "Press-To-Talk" switch on his microphone. This automatically causes the radio to shift from radio to interphone operation, regardless of the position of the tank commander's selector switch.

The latest modification of the interphone system consists of the addition of two interphone boxes, BC-658, and the necessary cordage to install radio for infantry communication (AN/VRC-3) within the tank. The tank commander is able to operate the vehicular radio, the interphone system, or the AN/VRC-3 set by using the two selector switches on the interphone boxes. Also, the loader-radio operator is able to monitor either the vehicular radio, or the AN/VRC-3.

POSITION OF THE SELECTOR SWITCHES

	TANK COMMANDER'S		LOADER'S
	BC 606	BC 658	BC 658
Tank commander operates the interphone. Loader monitors the AN/VRC-3	Interphone	Interphone	Radio
Tank commander operates the vehicular radio. Loader monitors AN/VRC-3	Radio	Interphone	Radio
Tank commander operates the AN/VRC-3. Loader monitors vehicular radio	Interphone	Radio	Interphone

*The Armored School.

The preceding chart illustrates how this is done, giving the position of each of the switches on the three interphone boxes when the tank commander operates the vehicular radio, the interphone system, and the AN/VRC-3.

Interphone Operations

(The following material was compiled and revised from FM 17-67 Crew Drill, Medium Tank M-4; FM 17-68 Crew Drill, Light Tank M5; FM 17-74 Crew Drill, Heavy Tank T26; and FM 17-75 Crew Drill, Light Tank M24 by the Communication Department, The Armored School. It has been recommended that this information be incorporated in TM 21-305, Driver's Manual, to furnish a standardized system for interphone operation.)

The achievement of perfect teamwork in a tank crew requires a thorough knowledge of interphone procedure, language, and equipment, and the highest degree of discipline.

As in any other operation, the preoperative stage of maintenance or the "check" stage is used in the interphone operation.

As soon as the entire crew has mounted the vehicle, each crew member plugs in his headset and microphone in the respective jacks. The commander orders, "Check interphone." Each crew member then calls the designation of his position, followed by the word "Check." This sequence of reporting is as follows:

M26, M24, and M4:
1. Gunner.
2. Bog.
3. Driver.
4. Cannoneer.

M5:
1. Gunner.
2. Bog.
3. Driver.
4. ———.

During this procedure, each crew member adjusts to the desired level the volume-control on his interphone control box. He must check to see that the microphone switch does not remain in the locked position.

All crew members should understand that, by pressing the "Press-To-Talk" switch on the microphone, all external radio communication is interrupted. Therefore, if the tank commander is transmitting or receiving a radio message, the "Press-to-Talk" switch on the microphone should be pressed only in case of emergency.

Efficient operation demands that interphone conversation be kept to the minimum. The following terms are prescribed for interphone language:

Tank commander ..... "Lieutenant" or "Sergeant"
Gunner ..... "Gunner"
Driver ..... "Driver"
Cannoneer ..... "Loader"
Bow gunner ..... "Bog"
Any tank ..... "Tank"
Armored car ..... "Armored car"
Any unarmored vehicle ..... "Truck"
Any antitank gun ..... "Antitank"
Infantry ..... "Doughs"
Machine gun ..... "Machine gun"
Airplane ..... "Plane"

The following are commands for movement of the tank:

To move forward ..... "Driver, move out."
To halt ..... "Driver, stop."
To reverse ..... "Driver, reverse."
To decrease speed ..... "Driver, slow down."
To turn right 90°
"Driver, clock three . . . steady . . . on."
To turn left 90°
"Driver, clock nine . . . steady . . . on."
To turn left 60°
"Driver, clock ten . . . steady . . . on."
To turn the tank right (left) 180°
"Driver, clock six right (left) . . . steady . . . on."
To have driver move toward a terrain feature or reference point, the tank being headed in the proper direction.
"Driver, march on white house (hill, dead tree, etc.)."
To follow in column ..... "Driver, follow that tank."
To follow on road or trail .... "Driver, right on road."
To start engine ..... "Driver, crank up."
To stop engine ..... "Driver, cut engine."
To proceed in a specific gear
"Driver, third gear (first gear, fourth gear)."

The following commands are for the control of the turret:

To traverse the turret "Gunner, traverse left (right)."
To stop turret traverse "Gunner . . . steady . . . on."

Interphone operations differ in various armored vehicles; however, all interphone systems in full-track armored vehicles are dependent on either the radio set or an interphone amplifier.

Based on the most recently authorized modifications, the following operational conditions exist:

1. In the light tank, M5, both the tank commander and the gunner are able to transmit on the radio when the "Radio-interphone" selector switch is held in the "Radio" position. All other crew members can talk and listen on "interphone" when no transmissions are being made.

2. In all other tanks, only the tank commander can transmit on the radio. All other members are able to talk and listen on "Interphone" when no transmissions are being made.

REMOTE CONTROL

*by Captain William E. Felty**

REMOTE control equipment for radios was used extensively by soldiers in the European campaign, especially during the extremely cold and uncomfortable winter months of 1944 and 1945. The making of remote control equipment by which he operated his radio set, usually rested with the individual. The types and models designed were therefore of various sizes, shapes, and all degrees of practicability, but they all consisted of the same basic types of equipment: the necessary plugs, and long wires to the outer ends of which were connected either a control box of some sort, a microphone, headset, loudspeaker, or a leg key. Such equipment kept many men in communication work from suffering frostbite, and uncomfortable tours of duty as radio operators. In the separate tank battalion, of which I was communication officer, a workable remote control system was used which was easily installed in any CP location. It consisted of a 50-foot extension wire (Spiral Four telephone wire), on one end of which was connected a jack for the microphone plug of the transmitter, and the receiver plug. On the other end, which was to be used inside the CP, a headset and microphone was connected. This worked well until it became necessary to operate on more than one channel. Someone then had to go to the radio vehicle to select the proper push button. This was eliminated, however, by laying two sets of wires running into the CP, each connected to a radio on one of the two net frequencies. It proved a very convenient and worthwhile remote control system.

Another system, which was effectively employed by the 3d Armored Division, was to bring a complete radio set into the CP and run extension cables out to the vehicular battery. While this isn't necessarily a remote control hookup, it did reveal that communication personnel were working on means of operating radios without having to undergo withering shell fire, in addition to cold and wet weather. These ingenious devices were quickly noted by commanders and communication officers, and work immediately was started on some method to standardize remote control equipment. Through trial and error we today have a remote control unit for radio sets that will serve practically every situation.

The Remote Control Equipment RC-289 (consisting of the Remote Unit RM-39, and to be used in conjunction with a Field Telephone EE-8) will remotely operate any radio set we have. It provides for remote operation of voice, tone, or CW transmissions by radio from a field telephone connected by telephone wire to the remote unit, which in turn is connected to the radio to be used. The equipment can be used with either FM or AM sets, separately or together. This is particularly important because this one type unit can be employed in a headquarters to operate all types of radios whether they are AM, FM, voice only, or CW.

The RM-39 has a four-position selector switch covering Telephone, Radio, Through, and CW. This is used to select the type of operation to be employed between the telephone and the radio (s) being operated by remote control.

The field telephone, being connected to the RM-39, can also be tied-in to a switchboard circuit, thus making every telephone in the switchboard circuit a remote control station for the radio set.

In Figure 1 it will be noted that the arrangement is such that by talking into the telephone handset at A, the radio at D can be operated remotely to transmit a message to E. This could be a very desirable set-up for an OP utilizing equipment at A. It not only eliminates the necessity of having a bulky radio or vehicle at the OP, but provides radio communication with its headquarters or unit. (It would also have been very desirable during the month of January, 1945, in Europe, where the radio operator could have efficiently operated his radio from a cellar or from inside a building rather than having to sit in a cold half-track and nearly freeze.)

With this equipment, telephone communication can also be established from A to C by putting the selector switch on the RM-39 to "Telephone." The operator would, of course, have to be at the RM-39 unit to make the change.

Again referring to Figure 1, if the radio at D is an SCR-506, and a leg key is connected to the telephone at A, we thus provide an operator at A with a means of operating the SCR-506, even though he may be at an OP some 1,500 yards or more away. Incidentally, that would be ideal when the OP was in a tall building, because the observer could transmit information whenever he saw it. This saves time and reduces the chances of error through relaying a message to a radio operator.

In considering further possibilities of remote control equipment, it must not be overlooked that one field telephone can be used to remotely operate a number of radios on the command net frequency, one on the administrative net, and the mortar platoon net—provided a radio for each net has an RM-39 connected by wire to the telephone in the battalion commander's CP.

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*Communications Department, The Armored School.

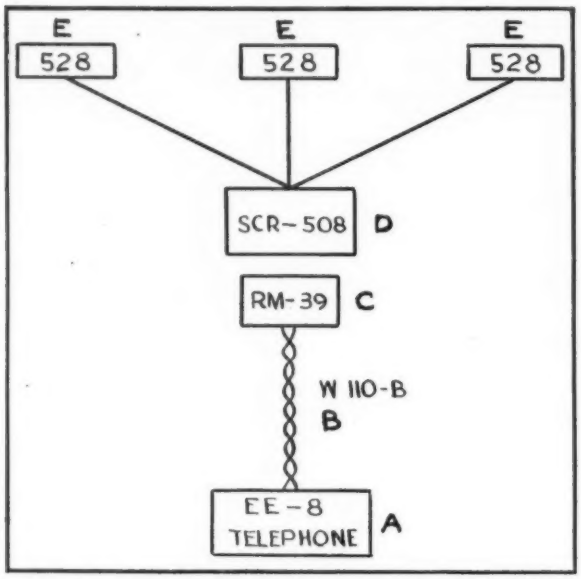


Figure 1—Showing one SCR 508 remotely operated from field telephone.

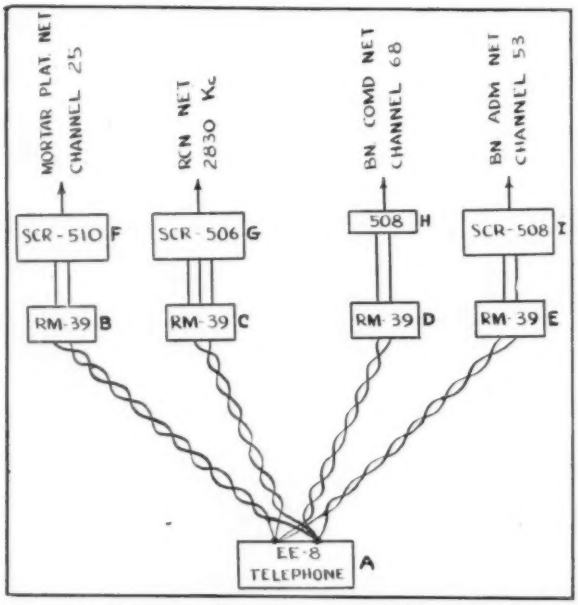


Figure 2—Diagram shows how one telephone can be used to remotely operate four radio nets, both FM and AM, simultaneously.

In Figure 2, note that from the field telephone A, one man can simultaneously transmit messages over radios at F, G, H, and I, even though they are all on different frequencies. In effect, this means that the battalion commander or a member of his staff can send a message over four radio sets at the same time. Think what a time saver that could be. Naturally, this type of arrangement would be used in either static positions or defensive operations.

It is also interesting that from the telephone in Figure 2, CW transmissions can be made over the radio at G by turning the channel selector switch of the RM-39 at C to the CW position. Also, if desired, a message can be transmitted from A over only one, or as many of the connected radio sets as desired. For example, if it is desired to transmit a message over the battalion command net and the mortar platoon net, the selector switches that were on B and D would be placed on "Through," while those on C and E would be placed on "Telephone." As a result, when the transmission is being made over the telephone at A, the operators at C and E may monitor while the message is being transmitted over radios F and H.

Note that in Figure 3, the field telephone A is connected to a telephone switchboard, "X." There are also three other telephones in this switchboard hookup. This arrangement, in effect, gives a radio-telephone switchboard to which six telephones and two radios are connected. This is true because the RM-39 units at B and C can be used as telephones. They are equipped with a ringer and bell just like the field telephone for the purpose of ringing and signaling to answer.

Figure 3 shows a very flexible arrangement whereby the operator at telephone A is in the telephone switchboard circuit. At the same time he can operate, by remote control, the radios at D and E, either singly or simultaneously, depending upon the position of the selector switch on the remote units at B and C.

Now, a matter which might be of great importance, and is particularly interesting, is that the telephone operator at Z can also operate by remote control the radios at D and E. In doing this he must be connected through the switchboard to the telephone at A. By using the same connection, he can also receive a radio message over both or either of the two radio nets. This might be of particular importance in many instances of defensive operations. It would certainly provide a means of close coördination between units. For example, if a tank battalion commander is at the infantry CP, "X," and has an urgent message for his company commanders, he can call by telephone and personally make the radio transmission to his company commanders by going through "X," A, B, and D. Many commanders can no doubt recall at least one instance during combat when they could well have used a communication link such as this.

(*For technical operation instruction, attention is invited to TM 11-2667, as amended.*)

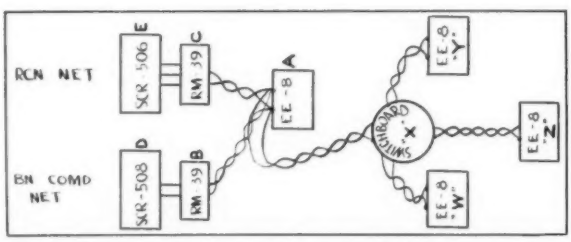
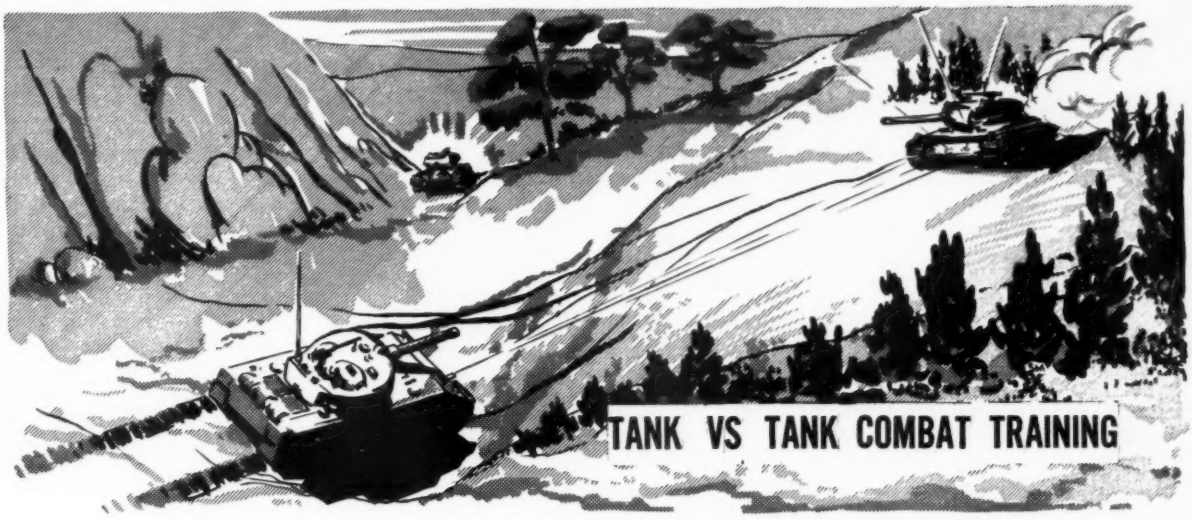


Figure 3—One telephone of a switchboard as connected to remote control units.



TANK VS TANK COMBAT TRAINING

*by Major C. P. Miller, Infantry**

The words "Tank-vs-Tank" in the title are somewhat misleading. The purpose of the training outlined in this article is not to teach men how to fight one tank against another. Although it does give a few pointers in that phase of combat, its principal advantage is in teaching men things about their tank and equipment that cannot be obtained from a book or through drill.

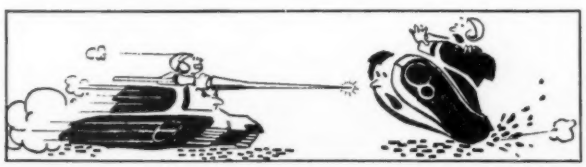
A MEDIUM tank crew is rolling into its first combat. Suddenly there is a terrific clattering against the turret as enemy machine-gun fire is encountered. An odor of burned paint and hot lead drifts through the tank. At the same instant the gunner's periscope is shot away, and he finds himself looking straight upward through his sight, down which bits of glass are falling. He reaches up quickly, unscrews his periscope locking screw and withdraws the shattered pieces. A few seconds later he has replaced the shattered 'scope with another, and is searching for a target. In the meantime, the tank has continued to move forward, and the commander has maneuvered it so that the bow gunner has brought his weapon to bear and knocked out the enemy machine gun.

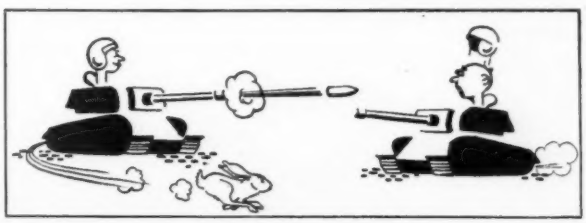
This action was successfully and efficiently carried out in battle because exactly the same thing happened before to this tank crew when they were in training in the States. This crew knows the sound of the impact of machine-gun bullets against their armor plate, and had periscope heads shot away before they embarked for hostile shores. They went through the uncomfortable feeling of having their tank shot at and hit in combat firing problems in the California Desert early in 1943—and they knew what to expect.

Members of the 35th Armored Regiment of the 4th Armored Division, developed "tank-vs-tank combat training" when their commanding officer desired a practical way of training tank crew teams for combat.

The training that was evolved taught personnel the necessity for crew teamwork. It forcefully drove home to tank commanders the opportunity of applying the basic principles of tank tactics, and it made them realize the problems and the importance of control. It afforded a faint taste of combat which, at the time, loomed large in the men's minds, and which cannot be described by words or pictures. It was a type of training that aroused the interest of the men, impressed them with the need for every member of the team doing his part, and in-

*Instructor, The Armored School.





stilled in them a definite confidence in their tank. The training developed platoon leader and company commander control; and improved communications at a level where their use is vital to success, and their misuse spells disaster. The success of this kind of training was well shown in combat.

The first steps taken to set it up were comprised of making test runs during which .30 caliber ball ammunition was fired from all angles at the M5 Light Tank and the M4 Medium Tank, as issued. Cardboard dummies were utilized to detect points of entry of bullet splash, and to estimate possible damage to the tank itself. Other than negligible scarring of the tank hull, the only damage was to antennae bases and aerials, and in shattered periscope heads and punctured air cleaners. Only the coaxial machine gun was used, making it necessary to plug the muzzle of the 75mm gun and the bow gunner's ball mount opening. All outside accessories were removed. Turrent crew members of the light M5s wore shatterproof goggles to protect their eyes from occasional bullet splash.

Problems confronting the officer who is setting up a tank-vs-tank combat training exercise are many. The biggest is suitable terrain. An extensive area is needed because bullets fly in all directions. The California Desert was perfect in this respect because of its many, and often dry, stream beds, which are surrounded by high ground.

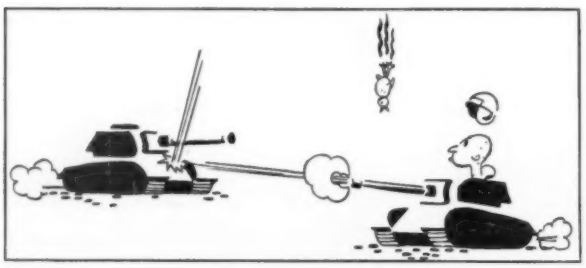
The problem of control is next in importance. One turn of a buttoned-up turret can easily confuse a tank commander's sense of direction. Accordingly, close radio control is desirable. In the training course, control was obtained through three Control Officers—Master Control, Control One and Control Two. Master Control remained stationary in a location overlooking the entire problem area, while each of the other two controls was attached to one of the elements participating in the exercise and followed it through the problem.

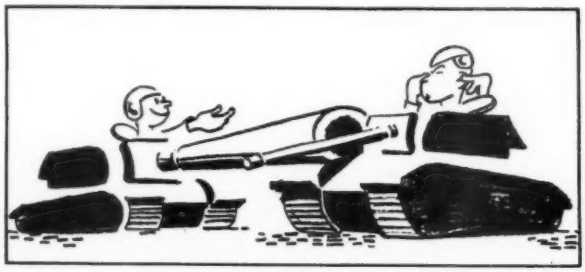
Master Control rode in an M4 Medium equipped with an SCR 508, and was in contact with the two controls as well as with each element engaged in the problem. Controls One and Two rode in M5 Light Tanks equipped with an SCR 528 (preferably a 508), and were each in contact with Master Control and also with their respective elements.

Master Control was responsible for the setting-up, coordination, and the execution of the problem, and the enforcement of the necessary safety precautions. Controls One and Two assembled their elements, and saw that they were ready to start the problem on time, and that the safety precautions were carried out. Controls also prevented tanks from moving outside the boundary lines, and saw that no gunner fired at the rear end of another tank so that air cleaners would not be damaged.

To show the general procedure, the following typical problem is described:

Master Control sets up an exercise for two medium tank platoons in a situation wherein each platoon is to destroy an "enemy" tank platoon advancing toward it down the valley. Control One, attached to Platoon A (so designated in order to follow the action), checks with the platoon leader to determine that all accessories have been removed, gun muzzles and bow gun ball mounts plugged, ammunition spaced in groups of four rounds to simulate the loading time of the 75mm, and that light tank turret crew members are wearing goggles. He then checks communications, and also sees that a medical aid man with equipment is riding in his own tank. Over Platoon A's radios, Control One can be heard telling Master Control that his element is ready. Prior to this the platoon leader has given Platoon A the situation and has issued his orders. Master Control orders "Button Up," and all hatches are closed. Control One checks all tanks, closes his hatch and reports his element ready. Master Control then orders "Move Out," and as the platoon moves forward, the light tank of Control One, clearly marked by a green pennant on its antennae, moves into position behind the platoon leader's tank. Platoon A moves down the valley in formation for about a quarter-mile, going slowly in order not to raise dust. Apparently the "enemy" has not considered the dust, for a cloud of it can be seen ahead. The Platoon deploys and takes cover. Soon an "enemy" tank moves out of the brush in front of the Platoon and rolls toward it with 'scope scanning from side to side. A Platoon gun hammers out its four rounds, and a tracer bounces off the "enemy" tank. It stops, and a yellow flag appears on top of the turret from the loader's periscope mount. The tank has been knocked out, and cannot be fired at again. But there is a terrific clanging against our own turret as a hit is scored by a tank coming out of the brush on the left flank. Our gun is cleared and up goes the yellow flag—"Out of Action." Control One can be heard





telling one of Platoon A's tanks to cease firing, and also "blasting" the tank commander for firing again after his tank had been hit. Master Control now orders, "Cease firing, clear guns and elevate muzzles"—and then: "Open hatches, report to OP for critique."

Two of the procedures in the training are contrary to those which would be used in combat, and the men should be warned against them. One is stopping the tank when it has been hit. Although this is necessary in order to retain control, it should be pointed out in each critique that such a practice is purely an artificial control measure imposed by training restrictions, and that in combat tanks must remain mobile when attacked, so that they may either outmaneuver their opponent, or seek the necessary cover to best fulfill their mission or to more fully contribute to the mission of their unit. The other falsity is in elevating the guns when the problem has ended. This is merely a visual sign that the guns have been unloaded. Crews have done this in action, and the tank has been drilled through the turret-face between the mantlet and the ring. Perhaps a better plan would be to use a flag in the latter phases of training, although this would leave loaded guns in a dangerous horizontal position.

As proficiency and control are gained in platoon exercises it is practicable, if the terrain permits, to enlarge them and employ two tank companies, each of which is reinforced by a reconnaissance platoon. The reconnaissance platoon should be mounted in light tanks. The two companies, preceded by reconnaissance, are started toward each other from points four or five miles apart. Their radios should be on different battalion channels. Information gained by reconnaissance is reported back to the company commander, who plans and directs the movement of his company. He controls his elements and directs their fire so as to mass it when necessary in order to establish a base of fire while a platoon is dispatched to effect the required maneuver. The same controls—one per company and one Master—are used as in the platoon exercises. It was also essential to add the additional precautionary ground rule of not shooting at dismounted men. For it was found, until forbidden, that the men did not hesitate to leave their vehicle in defilade and scout ahead on foot, signalling the information thus gained back to their crew for radio transmission to the company commander.

The critique covers the tactics employed by the element commander, and the conduct of their tanks by individual tank commanders. The entire problem is discussed and every man given the chance to comment on the exercise. Emphasis should be laid initially on encouraging the individual crews, and then the platoon, to talk about the difficulties encountered. During training, many crew obstacles were overcome by encouraging free discussion. Much interphone and platoon communication difficulty also was overcome.

QMG Shipping 300 Blooded Horses

APPROXIMATELY 300 additional Thoroughbreds, half-breds and Arabs will reach the Quartermaster Remount Depots in the United States by September 10 as a result of a second trip to Germany, Austria, and Italy now being made by Colonel Fred L. Hamilton, Chief of the Remount Branch, Office of The Quartermaster General.

These horses are in addition to the 152 shipped to the Aleshire Quartermaster Depot (Remount) at Front Royal, Virginia, last fall. The latter shipment included 64 Thoroughbreds, 40 half-breds, 22 Arabs, 16 Arab-Kinds, nine Lippizanners and one Russian horse.

Most of these animals were captured from the German Wehrmacht by the American Army of Invasion. A few were requisitioned from German citizens by our Army of Occupation. Still others were requisitioned from the ex-German government (other than the Wehrmacht).

"It is the intention of the Remount Service to assign the stallions and colts, as they mature, to civilian agents throughout the country in accordance with the Remount Breeding Plan," said Colonel Hamilton. "The Arabs, Grade Arabs and Lippizanners have been shipped to the Remount Depot at Pomona, California, for use or distribution. The Thoroughbreds have been held at Front Royal. Half-breds have been shipped to the Remount Depot at Fort Reno, Oklahoma. The mares and fillies will be held at the Army Remount Depots as prospective brood mares for the production of additional stallions. All of these horses represent some of the finest blood lines in the world.

"With characteristic German thoroughness, these horses have been bred for temperament, durability and thriftiness for generations," Colonel Hamilton said. "Thoroughbreds and grades alike have been thoroughly tried in many ways, and only those with exceptional records were sent to the government nurseries for breedings. This system of selective breeding is exactly in accordance with the objectives of the American Remount Service. We feel that we can advance our Army Breeding Plan many years through adapting to our own Remount program the experience of Europeans and the results obtained by them."

Editorial Comment

Mobilitate Vigemus

WITH this issue of the ARMORED CAVALRY JOURNAL we set forth on what we believe to be another step in the right direction—a step which embodies the spirit of the old traditions, in the trend of modern warfare.

Although many of us who have been readers of THE CAVALRY JOURNAL for many years have a feeling of nostalgia, we can be assured that under the present editorial policy (and we hope for many more years to come) the horse and all interests pertaining thereto either from a military standpoint or otherwise, will receive space in our JOURNAL—and "OLD BILL" will occupy his usual place on the cover. A good Cavalryman could never stand still—he always tried to go forward and we believe we, too, are marching forward.

The Executive Council of your Association discussed the proposed changes over a long period of time before submitting them to the members for action. A very comprehensive statement of the Executive Council which was presented at the meeting by Major General Verne D. Mudge, Vice-President of the Association (who formerly commanded the 1st Cavalry Division during its fighting in the Pacific) covers the situation so thoroughly that it is reprinted here as an editorial.

* * *

Minutes of the Special Meeting of the United States Cavalry Association, in Washington, D. C., Monday, July 8, 1946

THE special meeting of the United States Cavalry Association was held in the office at 1719 K St., Northwest, Washington, D. C. at 8:15 P.M., Monday, July 8, 1946 for the purpose of voting on the proposed amendments to the constitution of the Association. The meeting was called to order by the President, Major General I. D. White, U.S.A.

Six hundred and thirteen members were represented in person or by proxy. This number represented a quorum.

A reading of the minutes of the previous meeting was dispensed with.

Opening statement by General I. D. White:

"Gentlemen:

As you know, this meeting is called for the sole purpose of voting on proposed amendments to the Constitution, these amendments are as follows:

Article I. Title.

The name of this association shall be The United States Armored Cavalry Association.

Article III. Objects.

1. The aim and purpose of the Association shall be to disseminate knowledge of the military art and science, to promote the professional improvement of its members, and to preserve and foster the spirit, the tradition and the solidarity of the Armored Cavalry of the Army of the United States.

2. In furtherance of its aim and purpose. the Association shall publish with such frequency as may be determined from time to time by the Executive Council, a professional and scientific journal to be known as THE ARMORED CAVALRY JOURNAL, and conduct a book department for the sale to its members and the public, of books, maps, and periodicals.

Article IV. Membership.

1. No change.

(1) Active, for which all general officers of the Army of the United States and all officers, and warrant officers, commissioned in, and serving with, the Cavalry or Armored Cavalry of the United States shall be eligible. Active membership shall cease on the last day of the calendar year after the individual's relief from the Armored Cavalry.

(2) Associate, for which all present and former commissioned officers, warrant officers, and noncommissioned officers of honorable record of the military or naval service shall be eligible.

Before putting the articles to vote, the meeting is now open to discussion."

Major General Verne D. Mudge—"As General White has said, the purpose of this meeting is to vote on a proposal to amend the Constitution so as to change the name of the association from 'THE CAVALRY ASSOCIATION' to 'THE ARMORED CAVALRY ASSOCIATION,' as well as changes in regard to membership. As a member of the Executive Council I have been designated to give a brief résumé of the events which have led up to this meeting. My remarks will be confined solely to the change of name of the association and of the JOURNAL.

The composition and structure of the Army have always been quite fluid. During the war they were subject to continuous examination, resulting in many changes. This analysis is continuing, with the object of determining the best in the way of a postwar Army. Many important changes have already been conceived, evaluated and acted upon.

With the importance of our Cavalry influence in mind, the General Staff therefore approved the creation of a new Arm which would preserve this influence, and decided that such a recommendation should be made at the proper time. This new Arm would be so

constituted as to embrace the functions of large armored units, while at the same time maintaining the Cavalry doctrine which has been so important in our military thinking. On that basis the name 'ARMORED CAVALRY' was selected, and represents the present position of the War Department in this matter.

It might be well, at this point, to enlarge upon the proposed scope of this new Arm. It comprises all mechanized units, such as the Cavalry groups, all tank units, and all horse units of the postwar Army. It is felt that all these categories are implements of a common doctrine—the doctrine of aggressive mobility combined with great fire power. The War Department believes it unwise to attempt to maintain these three categories as separate Arms. Such a procedure would be extremely wasteful when measured against the actual troop requirements for each category in any particular theater. By combining these categories on the basis of a common doctrine a reasonable degree of flexibility is attained, permitting the organizing and employment of whatever balanced mobile force is necessary to meet requirements. It is well to realize at this point that it is not contemplated that the technique of horse units shall be abandoned. It is the intent of the War Department that horsemanship and horsemastership be retained in the Army to the extent necessary for implementation of the mobilization plan, or to meet future requirements. *We may thus regard animal elements, mechanized cavalry and armored units as the three components of the Armored Cavalry.*

What should we members of the Cavalry Association do about it? After no small amount of thought and investigation your Executive Council has concluded that three courses of action are open.

First, we can do nothing. We can await final Congressional action, following which we could survey the situation in a deliberate and orderly manner, and recommend a procedure. As a matter of fact, not to do this, is to throw ourselves open to criticism that we are acting prematurely, or unwisely, or at the least, hastily. Your Council considered that plan, and the obvious objection to it, seriously and at length. We discarded it with full knowledge of the risk entailed. But we feel that it is a calculated risk, and certainly not so great as to be avoided by a Cavalryman. The alternative—doing nothing—is distasteful, and also is fraught with the possibility that delay might prove most costly. The armored and mechanized elements are seeking today a basis for organizing, and cannot be expected to delay indefinitely. Also, many of our finest members belong to these other components. Unless we can provide some common basis we shall lose much of our strength, and be relegated to a very minor rôle. The result would probably be two or three relatively small associations, instead of one large one capable of meeting the needs of armor, mechanization and horse. Accordingly, we were not content to do nothing, notwithstanding the risks always inherent in aggressive action.

Secondly, we can circularize our own membership, as well as the officers *assigned* to Cavalry groups and tank units, in an effort to gain some sort of guidance from them. This would encourage a full discussion of the matter. It would provide many bases for future action. It might possibly even give a better solution. We don't think so. In the first place, this problem is not a new one—it has been argued and discussed within our membership for years. Secondly, it tends to cater to those who want two or more completely separate associations, to the disadvantage of our own.

Third, we can take vigorous and prompt action which should strengthen our Association at the same time recognizing the trend of coming events. After discussions with General Devers and some members of his staff, and with General White and the then commanding General at Ft. Knox, we decided to recommend bringing the matter to a vote without delay. We felt that, with the War Department committed to a course of action, the risk of a Congressional reversal on so strictly a military issue is small enough to offset its deterring influence. We feel that it is unwise to risk any fumbling, and that good judgment dictates a prompt recognition of this newly conceived Arm, and the taking of prompt and aggressive leadership therein.

Additionally, I might at this point again invite your consideration of the adverse effect which further delay may have upon the strength and prestige of our own Association. Also to the fact that many of our members are now serving with armored units, and look to our Association for leadership. And finally to the fact that the future of the horse cavalry is definitely not the issue; the issue is whether to expand the Cavalry Association to include the armored and mechanized elements, whose concepts are identical with our own, and thereby retain the leadership which our Association has always held in the field of Cavalry thinking.

Accordingly, we are recommending the changes which are on the agenda of tonight's meeting. And I wish to say that the Council makes these recommendations only after a careful study and evaluation of the situation, and certainly with a full measure of the respect for the opinions of all our membership to which their long and zealous service in the Association so justifiably entitles them."

General White—"Thank you, General Mudge. I think that clarifies the situation and I believe this statement should be published in the next issue of the JOURNAL. It will also clarify the situation in the minds of a great many of our members who were not able to be present."

After a short discussion and questioning, the Amendment to Article I was read and put to a vote. All members present voted unanimously "in favor" of the amendment. Proxy votes were counted and cast by the Secretary—440 in favor, 160 against. The Amendment to Article III was read and unanimously voted for in the affirmative by all members present—proxy vote

counted as 463 in favor—155 against. Amendment to Article IV was read and a discussion followed in which some of the members wanted clarification of the interpretation of the amendment. The following explanation was made by Colonel E. M. Sumner—"Inasmuch as active membership included all officers, or warrant officers, commissioned in, and serving with, the Cavalry and Armored Cavalry, this would include those of other branches. Therefore, a Field Artilleryman, Infantryman or those of any other branch, would be eligible for active membership during the period that he was serving with an armored unit. Active membership would cease on the last day of the calendar year after the individual was relieved from duty with an armored unit. We feel that even though the individual is commissioned in another branch, that he should be allowed active membership in our association because he would obviously be interested in the welfare of the branch in which he was then serving. The active membership would also include officers and warrant officers who are members of the Reserve Corps and National Guard. Inasmuch as this report will be published in the next issue of the JOURNAL, it is recommended that any of the subscribers who are in doubt of their status as active or associate members, should write to the Secretary of the Association, who will be very glad to advise them of their membership status."

There being no further discussion, Amendment to Article IV was put to a vote. All members present were unanimously in favor—the proxy vote counted and cast as 603 in favor and 15 against.

The Amendments to the three Articles were passed by the necessary vote of two-thirds of the active membership of the Association and therefore adopted and made a matter of record.

The Secretary submitted the proposed change for the cover of the JOURNAL and it was unanimously approved.

There being no further business, the meeting adjourned at 10:45 P.M.

Commendation By General Eisenhower

HEADQUARTERS 1ST CAVALRY DIVISION

APO 201

GENERAL ORDERS Camp Drake (Tokyo) Japan

NUMBER 29 13 May 1946

1. The soldierly appearance and performance of all ranks of the 1st Cavalry Division at the review and inspection tendered to General of the Army Dwight D. Eisenhower, Chief of Staff, United States Army on 12 May 1946 at Tokyo, Japan caused General Eisenhower to write the following letter, which is so gratifying that it is published in this general order for the information of all and to make the letter a permanent record.

"12 May 1946

My dear General Bradford:

The magnificent appearance of your troops this morning has made a tremendous impression upon me. In all of my visits during the past four years, I have seen no troops who have presented a more inspiring sight. I was very proud to view such a display of military perfection.

Please extend to all of the officers and men of the 1st Cavalry Division my sincere appreciation for the honor done me, and pass on to them my congratulations for a job well done.

With warm personal regards,

Sincerely,

/s/ Dwight D. Eisenhower
Chief of Staff."

2. This order will be read to all troops at retreat.

/s/ W. B. Bradford
Brigadier General U. S. Army
Commanding

1st Armored Division Association

THE 1st Armored Division Association has been organized and has approximately 100 members. Any EM or officer who served a period of 60 days at any time, or any period of time in combat is entitled to membership. Any officer or enlisted man who served as an observer for 30 days or more, or was on detached service with the division 30 days or more while in combat is also entitled to membership.

A handsome membership certificate is available for 50 cents.

No membership dues are contemplated at this time because the purpose of the organization is to maintain a roster of former division members who can be contacted from time to time with reference to veterans' affairs, and can meet as a group during national conventions of veterans' organizations.

For membership in the association both enlisted men and officers should contact Major Franklin W. Patten, ASFTC, Classification and Assignment Branch, Camp Crowder, Mo.

Back Journal Copies Wanted

ANYONE with copies of the various issues of THE CAVALRY JOURNAL listed below who no longer desires them, is requested to send them to THE JOURNAL at 1719 K Street, N.W., Washington 6, D. C. THE JOURNAL has had requests for the issues from subscribers who wish to complete their files, and will be glad to remunerate you for them. The issues are:

November-December, 1940.
January-February, 1941.
March-April, 1941.
March-April, 1942.
January-February, 1943.
May-June, 1943.
January-February, 1944.

OTHER BRANCHES

Major General John W. O'Daniel

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True battlefield coöperation is a prime factor in the reduction of battlefield losses.

Among the prime essentials to battlefield cooperation are these two:

A battlefield discipline which will permit each unit to count upon every other unit to perform its expected task.

An intelligent understanding by units of one branch of the capabilities and limitations of units of other branches.

The first of these can be obtained only through unremitting training in garrison, in maneuvers and on the battlefield. Efforts to this end can never be slackened nor suspended.

The second can be obtained by proper education and by arousing the interest of members of one branch in the problems of others.

The "Other Branches" department of the Armored Cavalry Journal promises to be a notable and intelligent contribution to mutual understanding and interest. The Journal is to be complimented upon this conception and upon the manner in which, thus far, it has been worked out.

I commend it to the careful consideration of every Doughboy.

Major General, U.S.A.
Commandant, The Infantry School

The Bronze Arrowhead*

TORCH. HUSKY. OVERLORD. TYPHOON. CYCLONE. ATOMIC. . . . words that have changed history and will dominate military thought for years to come. Long before the blast of the Atomic Bomb, the plodding Doughfoot emerged dripping from the sea to blast conventional military thinking sky high. He was basically the same old Doughfoot but he had landed successfully, in force and against opposition.

THE basic principles governing amphibious warfare are identical with those of land warfare, but the vital prerequisites for a successful seaborne operation are more exacting. The coördination and coöperation between arms and services must be projected to the nth degree. Both the higher commander and the landing team commander must be equally meticulous in the planning of the operation. Details such as logistics, supply, communications, and transportation must be thoroughly checked to assure that adequate plans have been made.

Ship-to-shore operations have long been considered as extremely hazardous ventures, capable of accomplishment only by highly specialized troops under the most favorable conditions. The abortive attempts made by the British to effect a seaborne landing at Gallipoli in 1915 occupy a unique place in military history, and have long been the subject of exhaustive study by military men.

At the beginning of World War II, no nation possessed a specialized amphibious force capable of forcing a landing against a determined enemy on a well-defended shore and then continuing overland to capture a strategic objective. The success of the Japanese in their landing at Lingayen Gulf in December 1941 was due to the extreme dispersion of our own forces, and to the superiority in numbers, air power, and supporting sea power of the Japanese forces. From the strategic standpoint, our forces in the Philippines were isolated far beyond our theater of operations, and their ultimate surrender came because of geographical conditions rather than revolutionary changes in the principles of warfare.

After the Japanese successes in the Philippines and elsewhere in the South Pacific, it became obvious that any successful campaign against them would have to be launched amphibiously. The concept that a seaborne landing could be made only by highly specialized personnel with a galaxy of unique material was laid aside. In its place was advanced the hypothesis that any infantryman, adequately supported by elements of other arms and services, could be quickly trained to launch his attack from the ramp of a landing craft and, once established on the ground, could locate and destroy the hostile force.

Battle experiences from the beaches at Anzio to the heart of the Nipponese-mandated Okinawa have converted this hypothesis into an axiom. But to the doughboy, with a pack on his back and a rifle on his shoulder, the problem is eternally the same—*to attack and destroy the enemy*. Whether he walks, rides a truck, drops from the air, or floats ashore on a rubber raft, his job is unchanged.

The only difference in an amphibious operation from the standpoint of an individual infantryman is that he must train twice as hard and as long, must learn twice as much about the enemy situation and about the mission of his own unit, and must be prepared to advance in the face of enemy fire for an unpredictable distance through water and sand before he can fire a shot in retaliation. To get the doughboy's personal viewpoint on the subject of amphibious warfare, however, the three logical phases of such an operation must be examined. These are: the preparations on the near shore, the preparations aboard ship, and the assault landing.

Rough coral bottom and Japanese machine-gun fire retard the progress of infantry assault waves on Butaritari, Makin Atoll.

Signal Corps Photo

*From The Infantry School.

Preparation On the Near Shore

Because of the special nature of amphibious operations, training and preparation are of the utmost importance.

Individuals must be in top physical condition in order to bear up under the intense effort expended in the initial phase of a landing. It is necessary for the soldier to carry much larger loads ashore than he would normally carry in land operations because of the uncertainty of resupply in the early stages of combat following a landing.

As a part of the extended training program preparatory to making a successful amphibious operation, all infantry battalions of the 6th Infantry Division, for instance, were given one week's training on an Australian troop transport, culminating with a "dry run" landing in New Guinea on terrain similar to that which was to be encountered in the actual landing at Lingayen Gulf. During this training the individual soldier learned how to go over the side of a ship and descend a cargo net into a landing craft, how to lash and lower equipment, to take his place in the boat, and to leave the boat when it reached the beach.

Several weeks before the contemplated operation, naval gunfire officers and their parties, an air liaison officer, and field artillery forward observers and liaison officers were attached to the unit. Consequently, all members of the battalion landing team had an opportunity to work together and to take part in a full-dress rehearsal before embarking for the actual landing. In these training rehearsals, communications were vastly improved, all attached officers and enlisted men became acquainted with the battalion staff and other key personnel, and an *esprit de corps* was developed among all members of the landing team regardless of their branch of service.

Organization of boat teams is one of the most exacting tasks required of the S-3 of a landing team. An ideal boat team consists of a rifle squad which is reinforced by elements of the company weapons platoon or the heavy weapons company. Care must be taken to balance each boat team, so that if a craft is knocked out before it beaches no organic unit such as a mortar section or a machine-gun platoon is lost. The assault waves are made as strong in fire power as possible. When a small beachhead is to be secured, armored LVTs are particularly valuable if they are used to transport the first waves a short distance inland and thus are able to protect succeeding waves landing in LCVP-type craft.

The boat team organization is usually formed long before the actual operation, and it must be flexible. While the 20th Infantry Regiment was en route to the Luzon beach at Lingayen, a Japanese suicide plane crashed into one of the transports. The casualties included the naval gunfire officer, the air liaison officer, and two operators for the naval radios which were to accompany the battalion ashore. Although no replacements were available on the ship for such key personnel, officers and men with similar skills were taken by a destroyer from another ship in the convoy and placed on the troopship prior to H Hour.

The problems confronting the battalion landing team commander are many and varied. Every detail of training and planning must point toward the far shore. Because the commanding officer's control of the situation is practically nonexistent in the early stages of the landing, he must assure himself that every possible contingency is covered in his field order. The complete order for a single battalion landing team which is operating as a part of a major task force will often cover 50 pages, and each page must be read and reread until all key personnel thoroughly understand the order.

Preparation Aboard Ship

Before boarding ship, every individual from private to battalion landing team commander is assigned a definite berth. Both teams have been carefully organized on the near shore so that each team is a tactical unit, and the integrity of these teams must be maintained until the last doughboy runs off the ramp of the LCVP and reorganization takes place on the objective.

Even in the most efficiently organized landing teams, many changes must be made in boat team assignment tables during the voyage. Men get sick and go to the ship's hospital; men fall down the ship's ladders and break a limb; enemy action causes some casualties aboard ship; or even worse, some of ship's small boats are out of commission and unavailable for use on D Day. Consequently, changes must be made in the boat team assignment table almost daily to maintain it on a current basis.

While he was on shore, the individual soldier was put into the proper physical condition. Aboard ship, he must be *mentally conditioned* to carry out his part of the operation. Usually troop mess halls are made

Infantry weapons squads pause to adjust equipment after wading ashore. Boulders in the foreground give an idea of what the Doughboys walked on while in the water.
Signal Corps Photo

available to troop officers for assembling and thoroughly briefing the men on the various phases of the operation. All component parts of the landing team field order are explained in detail to noncommissioned officers.

Landing team commanders arrange for maps, charts, diagrams, or other material that will assist in showing the soldier what he has to do when he gets ashore. Diagrams show the exact area where his unit will land, including the type of beach, terrain gradient, vegetation, water barriers, and other obstacles he may expect on the enemy shore. Air photographs of the objective, furnished by reconnaissance elements of the air force, are usually available down to the boat team level.

Physical training or periodic exercise aboard ship is frequently impossible because the decks are covered with a maze of vehicles. While en route, boat team drills are conducted frequently so that the individual will learn to instantly recognize his boat number when it's called over the loud-speaker system, and will also know the exact route to his debark station.

The Assault Landing

During the night preceding D Day, Navy personnel open the cargo holds and rig the ship for unloading; commanders make last-minute inspections of their troops and weapons; and landing craft designated for the first wave are loaded with weapons and other matériel. Troops are fed their last meal aboard ship and wait in their compartments for the signal from the loud-speaker system.

Initiation of bombardment of the enemy-held beaches is made by destroyers, cruisers, battleships, and all types of aircraft and when the call comes for the first wave to report to debark stations, the enemy shore is illuminated by exploding shells. As each succeeding wave is called to their debark station, loaded into landing craft, and lowered into the water, the tempo of the bombardment increases.

After all organized waves have been debarked from the transport, the landing craft move to an orbiting point outside the range of enemy weapons.

Casualties to the landing craft are most numerous during the last 2,000-3,000-yard run to the beach. The boats advance as far toward the shore line as possible, but on the rocky coral beaches of the Pacific, troops sometimes debarked as much as 800 yards offshore and had to wade waist-deep water in the face of heavy machine-gun fire. Normally, however, Navy landing craft debark troops in shallow water within a few yards of the shore. LVTs with armor plate and four .50-caliber machine guns mounted on the rail frequently carry troops several hundred yards inland, and thus establish a beachhead in depth.

As each boat team continues from the ramp of the landing craft toward its assigned objective, it makes an effort to contact other elements of the parent organization. During this phase, capture of the initial objective and reorganization of units must be carried on simultaneously.

Large-caliber guns from supporting ships increase their range and fire on enemy targets beyond the beachhead. Naval gunfire officers attached to each landing team maintain direct communication with the destroyer or cruiser in support of the landing team in order to adjust naval fire on any target holding up the advance. The air liaison officer maintains contact with aircraft flying overhead, and directs strafing or bombing of hostile targets. Thus, until supporting artillery is brought ashore, the Navy and Air Corps furnish artillery support for the first few hours of the operation.

Special arrangements are made for the evacuation of casualties from the beach. Not infrequently, a man goes ashore from one landing craft, is wounded, and sent back to a hospital ship on another landing craft within the space of minutes.

Although all of the weapons and resources in the combined forces have been trained and coördinated for several months prior to the operation, and unlimited thousands of men and tons of matériel are still aboard ships of the task force, it is some tired doughfoot and his team mates who finally send up the green flare which means—"Objective Taken—Beach Secure!"

ARROWHEAD—"in the assault waves of an amphibious landing on enemy-held territory—"★

★WD Circular 56, 1946.

The Chemics Hit the Jap

*by Captain John F. Carroll**

Signal Corps Photo

Mortarmen of the 82d CWS fire volleys of 4.2 shells in support of the 129th Infantry Regiment in Manila. Crew is grouped because Jap air force was not in strength.

DURING the early days of 1942, the Japs experienced the efforts of a gallant group of Chemics who utilized their limited resources at Bataan and Corregidor to produce effective smoke munitions. During the ensuing three-year drive back by American forces, the Japs met a new Chemic, and gained a new concept of Chemical Warfare Service operations which caused more destruction to their war industries and homeland than even the Atomic bomb.

The technical devices developed by the Chemical Warfare Service, and operated by their own troops as well as other branches, found the soft spots in the relatively tough Jap armor. CWS incendiary bombs decimated Japan's war reserves by reducing the nation's war plants to ashes. CWS tank-mounted and portable flame throwers burned the Jap out of his foxholes and fortifications, and CWS 4.2 mortars, firing white phosphorus and HE, weakened his will to carry on.

To many people who are accustomed to look upon the wearers of the crossed retorts as "gasmen," it may be surprising to learn that from Australia to Okinawa every type of CWS unit was in action. There were mortar battalions, laboratory and smoke generator companies, decontaminating, processing, depot and air operations companies. And there were floating detachments of 4.2 mortarmen—something new—who in support of landing operations fired their "Goon Guns" from the decks of LCIs, and from speedy motor craft. Their mortars put smoke and HE shells in areas the big naval guns, because of their flat trajectory, could not reach with fire.

Hidden behind wartime security and hampered by the vast distance involved before a story reached the States, is the combat record established by such CWS mortar battalions of the 82d, 85th, 88th and 98th.

The 82d first fired their mortars on New Georgia, slogged through the steaming jungles of Bougainville, dragged their carts across the rice paddies of Luzon, and practically burned out their guns during the Battle of Manila. Biak, Hollandia, Tanamerah Bay, Leyte, Okinawa and Breakneck Ridge felt the impact of 4.2 shells from the other battalions. During the 141 days of continuous combat on Luzon, the 98th Chemical Mortar Battalion established a record of firing 106,000 25-pound rounds of high explosive and phosphorus. They frequently had to inch their mortars and ammo over knifelike ridges, and fought in rags for two months without rest as they fired, what often was, the only artillery support for the armored units.

During the operations along Skyline Ridge, the mortar positions could be reached only by a sheer, narrow trail that was difficult to negotiate ordinarily, and when wet was hazardous. Traffic was entirely one-way, and the passing of pack trains was accomplished only at widened switchbacks, or embankment recesses. Although the gun positions were only 800 yards northeast from the trail, there was a difference in elevation of 1,000 feet between the two points. An hour was required to make the trip from one point to the other. Artillery and mechanized equipment were out. Because of the mobility of the mortar it could be placed in position, and it was the most important single ground weapon available. . . .

Men of the 82d Chem battalion on the north bank of the Pasig River in Manila were awaiting orders for a fire mission to clear the Japs from buildings on its south bank. A withering stream of small-arms fire came from the Jap-held Post Office Building.

After a four-hour wait, the order: "Chase out the Japs," arrived, and the first WP shells got under way. A direct hit on the roof caused several small fires. Japs came into full view, racing over the roof and attempting to beat out the flames with their rice sleeping mats. The fire-command then was for HE.

Alternating rounds of WP and HE on the building and into the surrounding area scattered the fires, and prevented the escape of building occupants. Within a short time, Manila's beautiful post office was an inferno, and a series of explosions rocked it as probing 4.2 shells found additional ammo dumps within.

Before the Japs were completely cleared from Manila, CW mortarmen lobbed more than 20,000 shells into their office building hideouts.

When the Japs were driven from the city, they fell back and dug in on their Shimbu Line in the Sierra Madre mountains and awaited, but not for long, the advance of the Sixth Army.

*Chemical Warfare Service.

High up on the side of Mount Mataba, the Japs had carved out mazes of underground fortifications. On the mountainside were caves for big guns, and cliffside emplacements for machine guns and mortars.

Our planes and heavy artillery had blasted the entire area, and yet the Japs' big guns were still firing at our armor and infantry. With his infantry stopped for four days, the infantry commander gave the Chemics a free rein. Company B of the 82d Chemical Mortar Battalion, shooting from rugged mountain positions, began firing rock-crushing 4.2 shells, and WP shells whose flames and smoke drove the Japs into the open, where they were finished off, by either 4.2 HEs or infantry machine-gun fire.

Here is the way Captain Joseph Van Yush, of Lansford, Pa., told the story: "It was an eight-gun shoot when we supported the 63d Infantry in the attack on hills A, B and X of the Shimba. The Japs had heavy counterbattery on us—some of my men were wounded. Despite the fact that the Jap 150mm mortar was more than 700 pounds heavier than ours and threw a 50-pound shell, they didn't deter us very much. Besides, my men were experts. They performed the herculean task of firing 6,000 25-pound rounds from eight guns in one day. This was an average of 600 rounds per hour. As the battle raged, one gun fired 31 rounds a minute, which meant a 25-pound shell was in and out of the barrel each two seconds."

Sergeant John Wagener, of Indiana, Pa., whose gun fired 812 rounds that day, said, "If you have never been present when mass mortars are firing, you have no idea of the punishing effect they have on the crews. To make matters worse, we were in a ravine and thus caught every reverberation. That night all the men were pretty shaky and practically had to converse in the sign language, but that solid wall of smoke and fire we maintained was about the most permanent ever seen in the Pacific, to say nothing of how permanent the Japs on the other side of it were. . . . Work?" asked the sergeant. "George Pettit, my 125-pound gunner from Fort Laun, S. C., picked up, single-handed, and dropped down the muzzle of our mortar more than 10 tons of ammo that day. From dawn to dusk, we expended more than 300 2½-ton truckloads of 4.2 shells."

Frequently, the fighting in the Philippines was confined in such small areas that the evacuation of the wounded was extremely difficult. Furthermore, the Japs considered litter bearers and the medics to be targets of opportunity, and fired at them on every occasion. With most infantry outfits, when it was necessary to remove the wounded from the front lines, it became SOP to have the Chemics lay down a protective wall of smoke behind the medics.

Prior to the invasion of Palaus, it had been the policy to suspend naval and plane attacks for fear of hitting the assault troops. This deprived them of desperately needed water-level supporting fire. (This statement is amply borne out by a study of the newsreel shots of the early landings.) After some experiments, it was proved at Palaus that the amphibious 4.2 mortar was one answer to the prayer of the landing-barge passengers. The first results were so successful that the "Floating Mortarmen" had broader rôles in later invasions.

At first, it was planned to equip LCVPs and LCTs with 4.2 mortars. It was soon realized, however, that each landing craft of this type could mount but one mortar. Consequently, larger craft were used, which gave added stability and more accurate fire power.

It was also quickly learned that these trailer-mounted or soil-emplaced mortars would need baseplate modifications. The new deck-mount which was developed for the purpose consisted of a large wooden box that was reinforced with steel. The box was filled with a mixture of sawdust and sand on which rode a wooden subbase assembly, which in turn supported the mortar baseplate. The entire unit was lashed to the deck.

During the Peleliu operations, the seagoing Chemics mounted their guns on LCIs. The guns were emplaced on the main deck—one forward in the center of the craft, and the other two amidship on the port and starboard. The deck under each mortar was reinforced with steel plates. The two forward troop compartments served as the ammo dumps.

At Angaur, on September 17, 1944, the "topside" Chemics fired more than 2,500 HE rounds in support of the initial landing. The next day when the Japs infiltrated back into their previous sniper positions, they were quickly liquidated by 200 rounds which were fired as tree-bursts.

At Leyte, one group of LCI (M)s that was accompanied by rocket ships led in the first wave of assault troops, much like the blocking back in a football game punches holes for the ball carrier. These mortar boats laid down such a concentration—more than 1,200 rounds—that the landing troops failed to find a single live Jap within 500 yards of the beach edge. It was not that the Japs had withdrawn, for many were found heaped up in the trenches, the victims of concussion.

The natural versatility of these deck-mounted chemical mortars was again displayed at Lingayen and Okinawa. As the LCIs approached to within 2,000 yards, the seagoing CW men, by varying the powder rings as the ships approached to within 300 yards, were able to work over the entire area of the landing beach. They then began to cut off enemy armor and reinforcements by systematically "walking" their deck-mounted fire inland with rolling barrages which were laid at distances up to 4,000 yards. To quote one naval observer, "They are excellent artillery ships for firing into ravines and gullies which cannot be reached by other naval gunfire support ships, and their usefulness continues long after the initial assault."

It was not without cause that the Nazis referred to the 4.2 mortar as "Whispering Death," and that the Nips called it the "Automatic Cannon."

The "Sniperscope"*

THE "Snooperscope" and the "Sniperscope" have lifted the veil of darkness and made night vision possible for U. S. soldiers and marines by making it possible for them to observe and bring fire upon the enemy without visible light, and without revealing their own locations. These 'scopes operate by utilizing focused beams of infrared rays, which are electromagnetic radiations that are invisible to the eye. The two devices—which were among the most unusual instruments of World War II—were developed in 1943 by the Engineer Board, at Fort Belvoir, Virginia. As a war secret just recently released, the instruments are credited with playing an important part in jungle warfare.

For practical purposes, infrared radiation is invisible to the human eye. However, if an infrared beam is projected upon an area, objects in this area are illuminated, and reflect part of this radiation. By means of an electronic telescope, the reflected rays are picked up and converted into a visible image which corresponds to the infrared image when they pass through the electronic lens system. The eyepiece magnifies the image according to the power of the telescope. All objects viewed through such a telescope are green.

The "Sniperscope" is light and compact, weighing approximately 28 pounds, and consists of a .30 caliber M2 carbine upon which is mounted a spotlight, which has an infrared light source, and an electronic telescope. The infrared light source and telescope are powered by a portable power-pack and battery which is carried in a knapsack on the back of the operator.

Use of the Sniperscope involves pointing the device toward some sound heard in the darkness, switching on the power supply, and scanning the forward area until the cause of the sound has been located. From the spotlight, from which all visible light has been removed, infrared rays, visible only to the operator, are projected upon the area. The reflected infrared rays are picked up by the electronic telescope and converted into a visible image. Since infrared rays are invisible to the naked eye, the enemy is unaware that he is being observed, and the operator has only to aim and fire.

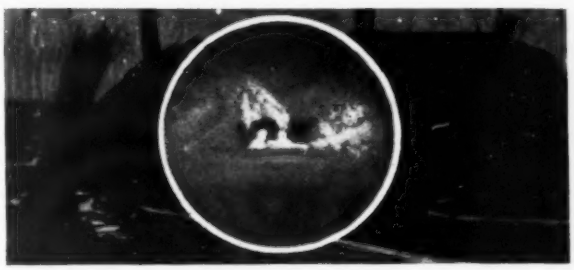
The "Snooperscope," companion and brother to the "Sniperscope," is similar in construction except that it is not mounted on a weapon. It is used for viewing objects and persons that are in complete darkness—to observe enemy activity, signal communications to friendly troops, direct fire, and to detect possible enemy use of similar equipment.

The use of the Snooperscope and Sniperscope proved particularly effective in combating Japanese night infiltration tactics, and with them on numerous occasions groups of approaching Japanese were completely wiped out. It has been reported that in the early days of the Okinawa Campaign the "Sniperscope" accounted for approximately 30 per cent of the total Japanese small-arms casualties. Employment of these weapons went far to nullify Japanese tactics, and relieve the burden of infantrymen holding down a foxhole during a black jungle night. The 'scopes greatly raised the morale of U. S. troops, who, while unobserved, could keep key areas under continual surveillance.

Sniperscope on carbine.

Scene in daytime.

At night, with unaided eye.



At night, with Snooperscope.

*From *Corps of Engineers.*

Signal Corps Photo

A U. S. Tank Destroyer M36 fires its 90mm gun point-blank at a Nazi pillbox emplacement to clear a path through a side street in Brest, France, in September 1944. The TD proved the master of any Nazi tank.

Signal Corps Photo

The 76mm Gun Motor Carriage M18 (Hellcat), the fastest tracked-vehicle in the world, is capable of a speed of more than 50 miles per hour, which enabled it to employ hit-and-run tactics. Its first use was in Normandy.

THE U. S. ARMORED

*by Major Thomas Gentel**

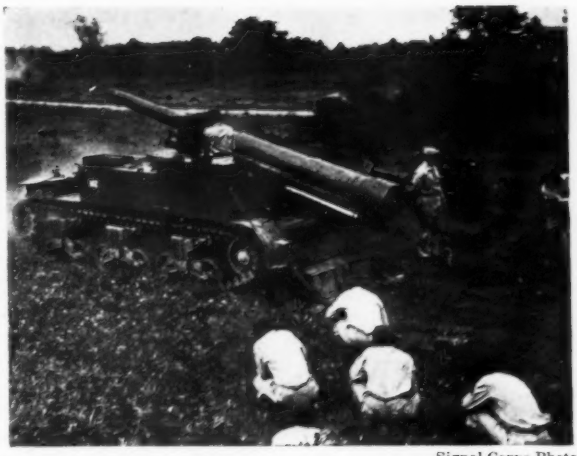
Everybody is fascinated by the biggest of anything. While size alone is no criterion of quality, "the biggest" is always intriguing. Hitler was no exception, and had a mania for the largest of weapons—but the two largest self-propelled artillery weapons in the world were built by the U. S. Army Ordnance Department.

GERMANY spent astronomical sums for huge guns that were used only once. Tanks weighing from a hundred to two hundred tons were under construction. Antiaircraft "guns" that shot jets of compressed air were built but were discarded as impracticable. Other "guns" had extremely long smooth-bore tubes in which after the projectile was started, blasts of compressed air were emitted at intervals to give it a high velocity. The tubes were incredibly long—up to 500 feet. To keep them from sagging was a major problem, and the Nazis solved it by burying the tubes in deep well-like holes in the ground. Obviously, the guns could not fire on more than one target except by reducing the velocity of the projectile. There were no adjustments for azimuth or elevation. The Nazis had aimed these guns at London, but as far as we know they were never used.

U. S. Had Largest Self-propelled Guns

Thus may be seen the fallacy of trying to build the biggest of anything. The two largest self-propelled artillery weapons in the world, however, were built by

*Ordnance Department.



Signal Corps Photo

The 155mm Gun Motor Carriage M12, known as "King Kong," fired the first shot into Germany during World War II. It was the first large caliber gun motor carriage used in the war. A hydraulic spade absorbs the recoil.

Signal Corps Photo

The 240mm Howitzer Motor Carriage T92, supporting one of the most powerful weapons in the world, is a companion piece of the 8-inch gun. It can hurl a shell that weighs 360 pounds for a distance of 25,000 yards.

VEHICLES

the U. S. Army Ordnance Department. These weapons, which will be described later, were no grandiose gestures but a practical rounding out of the most complete line of self-propelled artillery in any army.

There has been much discussion on the subject of what constitutes a tank and what a gun motor carriage (self-propelled artillery). At present there is no official description of either type of vehicle. The following differentiation is offered:

The tank is a combat vehicle which runs on full caterpillar tracks. It mounts armament in accordance with its mission, and its armor is designed to give overall crew protection against enemy fire.

An armored car, which, while giving full crew protection and carrying turret-mounted armament, is not a tank. The gun motor carriage, until late in the war, mounted its main armament in an open-top turret, and thus the distinction between the tank and gun motor carriage might be made on the basis of less "over-all" protection. The use of radio proximity fuzes and the fact that some gun motor carriages were employed in areas of friendly fire, however, made it advisable to close turret tops for crew protection, and so this distinction vanished. A further distinction might be made between the "assault" and "protective" purposes of these vehicles. The tank is a vehicle designed for mobile combat anywhere, while the gun motor carriage, with its main armament mounted for forward fire, is primarily a motor-transported type of artillery.

Other Self-propelled Weapons

The first self-propelled mount standardized in World War II—the 75mm Gun Motor Carriage, M3A1—provided mobility for the 1897A4 75mm gun. Standardized in November 1941 for antitank use, this half-track saw widespread action from North Africa to the southwest Pacific, and was the forerunner of our self-propelled weapons.

In size of caliber, the smallest self-propelled weapon is the Multiple Gun Motor Carriage M17, which mounts four caliber .50 machine guns in a Maxon turret. The Combination Gun Motor Carriage M15A1 mounts two caliber .50 machine guns and a 37mm antiaircraft gun. An experimental gun motor carriage mounting either four or six 20mm guns also was built. To provide an even more powerful self-propelled antiaircraft weapon to defend moving columns, twin automatic 40mm guns were mounted on a light tank, M24 chassis, and called the M19. Three tank destroyers were built for this specific mission. The first one to see action was the 3-inch Gun Motor Carriage, M10, the "Wolverine," which was basically an M4 tank chassis with an open-top turret mounting the 3-inch antitank gun.

Able to move at a speed of 50 miles per hour, the 76mm Gun Motor Carriage, M18, is the fastest full-tracked vehicle in any army. Its tremendous speed enables it to employ hit and run tactics by firing several rounds and speeding to a new position before the enemy can counterattack. Used first in Normandy, it ran up an impressive score in the destruction of German tanks, weapons and pillboxes.

Armor vs. Shell

As the armor of German tanks increased in thickness, more powerful weapons were needed to defeat them. For this purpose, the 90mm Gun Motor Carriage, M36, was built. Again the M4 tank chassis, which had proved so reliable, was used, and a 90mm gun was mounted in an open-top turret. Known as the "Slugger," it saw heavy action in Europe and was credited with some remarkable "kills." Firing a 24-pound armor piercing or HVAP shell, this weapon proved the master of any German tank in the field. At 300 yards an HVAP shell could completely penetrate 14 inches of armor! At ranges from 2,000 to 3,000 yards it was still devastating to Nazi tanks.

Practically every field artillery weapon has been mounted on a full-tracked vehicle. The smallest is the General Scott, 75mm Howitzer Motor Carriage, M8, which was used extensively and saw action in every theater.

Probably the most famous weapon was the M7 "Priest," and its 105mm howitzer, which helped chase Rommel out of Africa. It received its nickname from the pulpit-like mount for the caliber .50 antiaircraft machine gun. A newer version of this weapon, mounted on a light tank M24 chassis and called the "New Priest," was in action at the end of the war. The 155mm howitzer was also mounted on a similar chassis and nicknamed the "Gorilla."

"King Kong"

The first large caliber gun motor carriage used in World War II was the "King Kong," M12. Plans were started in 1941 to mount 100 155mm GPF guns on the medium tank M3 chassis. To help absorb the heavy recoil, a hydraulically operated spade was mounted at the rear of the chassis. This weapon, which fired the first shell into Germany, proved very successful. In two later developments, the 155mm gun, "Long Tom," was mounted on a General Sherman tank chassis, and the 8-inch howitzer was mounted on a companion vehicle, both of which were standardized in the fall of 1944 as the M40 and M43, respectively. In both, a new type track suspension system was used, which utilized horizontal volute springs instead of the vertical volute springs used in most of the M4s.

The field artillery pieces that have been developed by the Ordnance Department are made in "matched pairs"; that is, for every gun there is a howitzer as a companion piece. The howitzer, which is of larger caliber than the gun, has the same recoil mechanism and carriage. Companion vehicles are the 155mm Gun Motor Carriage, M40, and the 8-inch Howitzer Motor Carriage, M43.

The 240mm Howitzer

The two largest companion field artillery weapons are the 8-inch gun and the 240mm howitzer. These two weapons are carried on two transport wagons. A mobile clamshell bucket crane is used to dig the recoil pit and the holes for the spades. The bucket is then removed, and a hook substituted in its place so that the crane can lift the carriage from its wagon and emplace it. It then lifts the tube into place on its carriage. This process is time-consuming, and under favorable conditions of terrain and ground takes from two to four hours. This means that these weapons must be emplaced far to the rear of the lines where they will be out of the range of normal counterbattery fire of the enemy. Thus some of their powerful effectiveness is lost, for otherwise they could be used to demolish small highly fortified pillboxes and forts. For the first time, however, major field artillery can be used in the front lines if necessary . . . firing one or two rounds and withdrawing to a new position for a fresh attack.

Developing a chassis that could absorb the tremendous recoil forces involved when these weapons are fired was a major problem. The 240mm howitzer hurls a 360-pound shell a distance of 25,000 yards, and the 8-inch gun fires a 240-pound projectile 35,000 yards. The hydraulically operated rear spade used on the 155mm Gun Motor Carriages, M12 and M40, was adapted for use. As mounted on a chassis utilizing the suspension system of the Heavy Tank, M26, a side view of the chassis is similar to the M26, but one more bogie wheel has been added to give additional flotation.

A crew of eight men is the normal complement of each vehicle. When combat loaded, the weight of the 240mm Howitzer Motor Carriage is 127,500 pounds. The 8-inch Gun Motor Carriage weighs 5,000 pounds more.

Emplacement of these new weapons requires only a few minutes. While the tube is being released from its fastenings, the spade is being lowered. The vehicle is then backed up, which rams the spade firmly into the ground. The brakes are then locked. Meanwhile, other members of the crew are loading and aiming the piece. Ammunition is carried on a tracked ammunition carrier.

The war ended, however, before any of these new self-propelled weapons were used in action.

Future Trend

If there is a trend in self-propelled weapons, it seems to be toward making them more like tanks; that is, with all-round armor protection for the crews. It is difficult at present to visualize a tank turret mounting a 240mm howitzer and having a 360-degree traverse. Visionary, yes, but not impossible. When fired at right angles to the chassis, a powerful gun of this nature would tend to tip the vehicle over. Heavy guns, however, could be mounted in rigid turrets that had a limited traverse. There are also practical difficulties to overcome in transportation, such as limitations on weight and size which would be imposed by bridges, boats, railroads, etc. But whatever the trend, the ultimate in self-propelled weapons is undoubtedly far from being achieved.

WAR, PEACE, AND THE MEDIC*

All over the world—wherever an American soldier slipped a clip into an M1—the Army Medic picked up his first-aid kit and faced the enemy. As a result, in the ETO alone more than 2,000 Medics gave their lives.

THE medics' mission was, and always will be, the conservation of manpower by furnishing the disabled with aid that will speedily restore them to health and fighting strength.

As a result of their *esprit de corps,* 96 out of every 100 men who reached an Army hospital in World War II were saved. The disease rate was less than one man per 1,000 a year. In World War I, more than 16 men out of each 1,000 died each year. During the Spanish-American War and the Civil War, deaths were 26 and 65 respectively out of every 1,000 men a year.

To accomplish that great achievement in maintaining the largest and healthiest United States Army in history, Major General Norman T. Kirk, The Surgeon General, gathered together the best medical brains in America. They donned uniforms and went out with units.

About 47,000 American Medical Corps officers joined the ranks along with 15,000 dentists, 57,000 nurses, 2,000 veterinarians, 2,000 sanitary specialists, 1,600 hospital dietitians, 1,300 physical therapists, and 535,000 enlisted personnel.

Medical Department men landed with airborne outfits on D Day, battled arctic gales and fought disease in the tropics so that men might live.

"A Noble Breed"

The late Ernie Pyle wrote, "I hope somebody in this war writes a book about the Medics at the front—they are a noble breed. They deserve more praise than I

*From *The Medical Corps.*

Medics run in from No-Man's Land with a casualty on a stretcher as Germans fire on them. Tank in background has thrown up a smoke screen to aid in the rescue.

Signal Corps Photo

have words for—their work is deadly and it never ends."

Perhaps Pyle had witnessed incidents similar to that where the unit of Private Harold A. Garman, Albion, Ill., was evacuating three severely mangled men across the Seine. Enemy machine guns began firing. Garman instantly plunged into the icy water. Through heavy bursts of fire, he swam to the assault evacuation boat and towed it to safety. He received the Congressional Medal of Honor for doing his duty as a medical corpsman—saving lives.

Referring to other innumerable feats of daring and courage on the part of Medics traveling with combat troops everywhere, Colonel McFeyden, 26th Infantry Division Chief of Staff said, "Combat Medics perform several times a day acts of valor which performed one time by an infantryman result in a military award."

Making Evacuation History

Right where these combat Medics were making history—another type of history brand-new in the war just finished was being made. It was evacuation history. When a man became a casualty, the Medical Department took over.

First aid was administered where he lay. Then he was carried to a battalion aid station, still within range of enemy weapons, for emergency treatment and medical care. In a matter of minutes he was on his way to collecting and clearing stations where, after his case was diagnosed, he was prepared for transportation to an evacuation hospital.

From that outer fringe of the combat zone he was taken to a general hospital, far removed from combat noises, where complete medical facilities were available. Then, if the wounded man could not be returned to duty within a reasonable length of time, he was sent to a modern, general hospital in the United States by plane or ship.

No effort was spared in making the patient as comfortable as possible. He was constantly under the care of college-trained, experienced physicians, surgeons, and neuropsychiatrists, who were assisted by nurses and aid men. His welfare was their chief and only concern.

In one of his inspection trips, General Kirk interviewed wounded men in the European Theater of Operations. In answer to his queries as to when medical aid was given, battle-hardened wounded invariably answered, "Right away."

Immediate Action Called For

That pleased General Kirk. A surgeon in his own right, he is keenly aware of the necessity for immediate action when men are wounded. To facilitate that, he reversed the usual procedure of having the patient brought immediately to the doctor.

Under the new plan, the doctor went to the patient. That system holds even today as wounded soldiers in Army hospitals receive the best treatment possible.

When hospitals were being closed because of decreasing patient load and the discharge of medical personnel, an alarming situation developed. Specialists were becoming fewer. To meet the situation a page was taken from wartime experience, and the paraplegic, amputee, blind and neuropsychiatric patients were even more centralized then they had been within a geographic location in order that the country's great medical centers be more accessible. The specialists went with them. They were not transported needless miles nor were they without expert care for an instant. As their condition warranted, patients were transported to large Army medical centers in railroad hospital trains, especially constructed, litter-lined aircraft and ambulances. No interruption in their schedules was permitted. Feeding, medicinal application and surgical examination continued.

Skilled neuropsychiatrists, who returned to combat about 60 per cent of battlefield mental casualties, nurse the mentally ill back to normal in this country today. The office of The Surgeon General was instrumental in abolishing a previous practice of noting on a man's discharge record that he had been a neuropsychiatric patient, for a patient's civil welfare is also important to the Army.

The peacetime Medic is still actively practicing his profession as "family doctor" to Army men in the ZI, and in outposts in far parts of the world. Battlefield casualties are now a thing of the past, and in their place have come routine physical inspections, X-rays, shots for overseas assignments, food wholesomeness, sanitary living quarters and dental work. This is still a job for the Medical Department, and a big one. Research into cause and prevention of disease, intensive graduate training courses and improvement of prosthetic devices will always be of importance to the Medical Department.

With a postwar Army of 1,550,000 planned, the Medical Department has been hard-hit by discharge of skilled personnel. Experienced Army medical men, however, are attending advanced courses in civilian and government institutions throughout the country. In no instance will personnel be demobilized if it jeopardizes the health of soldier patients, General Kirk has said.

Already a sweeping program of employing civilian consultants in Army medicine is shaping up. Medical men, many of whom served in uniform during the war, are available to offer advice, keep the Army up with the latest in civilian advancements, and to inspect hospitals, their personnel and equipment for a firsthand, impartial report to The Surgeon General.

The QM's Job Today

by Henry Utley Milne

THE Quartermaster Corps' task of providing food, shelter, and clothing for the soldier of today is quite different from what it has been in the past. In World War II there were no restrictions on the conditions under which troops fought. The war theaters extended from the tropics to the arctic. We do not in the future wish to follow the disastrous military campaigns that resulted from operations in an unfamiliar environment —such as that of the Germans on the winter fronts in Russia.

In providing food, shelter and clothing for the soldier, the Quartermaster Corps must, therefore, first solve a larger problem. In the field of subsistence, it must anticipate and make use of the immediate and long-run effects of various foods on efficiency, comfort, and morale, besides studying the fundamental problems of types of rations for troops under varying climatic conditions, menus for troops in home posts and stations, types and manner of packaging and transportation, sizes and types of cans to be used, storage facilities, and refrigeration.

In the clothing problem there is not only quality, weight, texture, and color to be considered but also the mechanics of body heat production and the theory of clothing insulation in order to design warm but lightweight clothing which provides great freedom of action. Decisions must be made between the extra warmth of an additional pound of clothing as compared to the loss of mobility and energy expended by the wearer in carrying it around. Footgear must be designed to fit the requirements of operations in whatever theater.

Numerous changes in equipment, found essential from observation and use in the combat areas during the war, must be made. Means must be devised to protect clothing and equipment of all types against insects, mold, corrosion, and spoilage under new and different conditions with which the army has had little experience.

Major General T. B. Larkin, the first postwar Quartermaster General, recently said . . . "We are asking ourselves this question: 'What body protection do our people need against the gamma rays of the Atomic bomb?' It is logical that the Quartermaster Corps should supply the answer through its research into military clothing requirements. Other research will apply to each of the 75,000 items of Quartermaster supply.

"It is likewise considered important for our troops that research by the Quartermaster Corps disclose the relationship between food intake and energy expended and the amount of heat generated. Equally necessary is it to know the quality of clothing required for combat under widely different climatic conditions ranging from temperatures at 40 degrees below zero with a 40 mile an hour wind, to temperatures as high as 120 degrees above zero with no wind."

Now that the war is over and millions of soldiers have been demobilized, America's army is still approximately three times larger than it was before World War II. This increases the normal peacetime activities of the Quartermaster Corps although its personnel has been greatly reduced. The QM, however, is endeavoring to retain, even in face of the reduction, specialists of every kind—particularly those qualified in industrial management, research and development of all kinds, storage operations, petroleum engineering, textile engineering, and army supply and procurement.

The Quartermaster Corps will continue its training program. Plans call for enlarging the scope of training of QM Subsistence Officers in order that qualified personnel will be available for subsistence responsibilities necessary for maintaining the Regular Army.

Today the corps is taking stock of available items of issue at home and in all sections of the world, readjusting its program of procurement, and turning surplus articles back into civilian channels of consumption. It has developed a new field ration, made progress in the designing of a new uniform, and participated in a food conference conducted by the Army Ground Forces and the Army Service Forces at the Army War College. The purpose of the conference was the careful study of more than 200 recommendations pertaining to the improvement of field rations, including development, packaging and distribution, preparation and consumption, refrigeration, cooking and messing equipment, and the selection and training of food service personnel.

A great deal of emphasis has been placed on the immediate study and application of the lessons learned in the field during the war. The war was a proving ground for new foods, textiles and many kinds of materials and appliances. New materials were made available. New methods of manufacturing and handling were developed and, if properly applied, will improve the peacetime living for millions; developments in the processing and packaging of food may change the concept and scope of use of perishable goods; diet discoveries and food preparation may immeasurably improve the Nation's health; and countless other things are on the way to make living better and easier in the years to come.

The Quartermaster Corps will work in close alignment with every branch of industry. Its vast amount of wartime scientific research is now being released to the public. What has been done during the war and is being done today in Quartermaster Corps' research will be reflected in the consumer goods of tomorrow.

The AAF Works With THE JET*

THE jet engine, which creates a hot air hurricane to boost Army Air Force pursuit planes at supersonic speeds, is much simpler than conventional aircraft.

The jet plane is simple to operate and easy to maintain when compared with an 18-cylinder twin-row radial engine or with one of the liquid-cooled engines that powered World War II pursuit planes.

Air Force "hot pilots" have compared the jet engine with everything from a blowtorch to an oil burning lamp, but the swish—and that's about all that can be heard as it passes—is a bit more complicated than that. Its simplicity has not been overrated; but, jet power is, at best, a far cry from anything as fundamental as roller skating.

The jet engine was developed during World War II, but its greatest value was not clearly demonstrated until after the war. The original engine has been considerably improved and fuel consumption has been cut to extend range.

Today, after establishing sensational speed records in transcontinental flights, the P-80, "Shooting Star," a jet-propelled airplane manufactured by Lockheed, and powered by the General Electric "J-33" engine, has been adopted as the first plane for postwar pursuit outfits.

General Carl A. Spaatz, Air Forces Commanding General, has ordered P-80s for many pursuit and interceptor groups and the transition to this plane is well under way.

The pilot of a conventional aircraft experiences no particular difficulty in flying a P-80 because the flight controls are the same. He may require a few hours transition training, but this can usually be accomplished without delay. The change to a "Shooting Star" is largely a matter of learning how to "feel" controls at vastly greater speeds, and in becoming accustomed to the idea of staying ahead of the sound of his own engine.

Since the jet engine is totally different from conventional radial or in-line models, however, keeping these "hot shots" flying does pose the necessity of special training for the mechanics and the maintenance men that handle them.

Air Forces leaders have adopted the jets as standard for some pursuit groups, and the "keep 'em flying" lads of the AAF Training Command are cooperating.

The Training Command, commanded by Lieutenant General John K. Cannon with headquarters at Barksdale Field, La., is responsible for the training of all individual air crew members and technicians of the AAF. Flying crew members are trained through the subordinate Flying Training Command, with headquarters at Randolph Field, Texas.

The training of technicians is channeled through the subordinate Technical Training Command, Scott Field, Ill., which is pioneering the schooling of mechanics for jet engines.

The school, opened last October at Chanute Field, Rantoul, Ill., is busily engaged today turning out 40 graduates each week. Graduates are authorized to perform first and second echelon maintenance and are fully responsible for correcting day-to-day malfunctions and performing daily and preflight checks of equipment. Third and fourth echelon maintenance and overhaul will be done by maintenance shops.

The six-week Chanute Field course is the first of its kind. Most of the students encounter their first P-80 when they enter their hangar-classrooms; morale is no problem because of their enthusiastic interest in the plane.

All students were technicians on conventional airplanes before they began jet schooling. To be eligible for this specialized jet training, the trainee must be a graduate of an AAF basic aircraft maintenance school, or its equivalent. Upon graduating from the P-80 school, students are fully capable of acting as line chiefs, crew chiefs or engineering officers, depending upon their past training and assignment.

The course is of a new and distinct type, and the demand for P-80 maintenance experts is great, but Training Command officials are determined that it will be complete and adequate. Highly rated civilian jet engine specialists instruct the men. The civilians, all recognized experts, enable the Air Forces to offer its men the finest training available in this field today. All instructors are graduates of aircraft maintenance schools and have had specialized courses in aircraft electrical, instrument, power plant and hydraulic systems.

In marked contrast to the almost exclusive "learn by doing" expedient of wartime AAF training courses, the P-80 mechanics school devotes a considerable period of time to the study of theory.

This closer attention to background material is regarded as typical of postwar AAF training. Theory

*From *Army Air Corps.*

phases are expected to be continually enlarged during the interim training period, and to play a large part in peacetime training courses.

"The Training Command could not spare the time to devote long periods to a study of theory in wartime courses," General Cannon says. "Men were needed too desperately by the operational units. Theory was explained, but students graduated from technical courses during the war learned mostly by doing—graduating as men who knew their machines through the expedient of taking them apart and putting them together again. They learned how to locate malfunctions by working with equipment that had been deliberately put out of order by instructors. Learning by doing has proven an excellent system, and it will be augmented—not superseded—by theoretical study. More knowledge of theory will benefit the student enormously because it will enable him to assimilate new technological developments with greater ease."

Classroom study on the theory of the jet engine takes about one-fourth of the six weeks' course at Chanute. The remainder of the study period is spent in actual contact with the sleek P-80 and its engine.

This phase of training is highly complete. Engines are started in test blocks and run through the various speed ranges. Cut-away engines also are available that enable the trainee to see the interior and complete operating mechanism of the assembled unit. P-80s are used extensively in the training program in order that students may learn to remove and install complete engine units in record time.

The course is divided into four phases. Phase one is a study of airplane structure and hydraulic systems. Students learn to inspect and maintain the wings, fuselage, empennage, control surfaces and flight control mechanisms. Inspection and maintenance of landing gear, brake, fuel and oxygen systems is also a part of this phase, which lasts for two weeks.

In the second phase, which lasts one week, instrument and electrical system "trouble shooting" is studied.

Phases three and four, which students find most interesting, are taught in the final three weeks of the course. The jet engine, engine accessories, engine change and inspection, are studied thoroughly.

Students in these final phases begin to speak of "pounds of thrust" instead of horsepower, of "jet propulsion thrust" instead of propeller thrust. They learn to start the engine, run it through its speed ranges, check for any malfunction and stop it at the end of the check.

The blindingly fast, hard-hitting P-80 seems indicative of tomorrow's U. S. Army Air Forces. The Chanute Field course for jet engine mechanics is the Training Command's indication that regardless of how fast AAF planes may fly or how smoothly they may maneuver, the Training Command will be ready with the men to "keep 'em flying."

Ordnance Men Foresee Rockets Circling the Globe*

ORDNANCE scientists are probing the possibilities of using special warheads on antiaircraft weapons which will neutralize the threat of high-altitude bomber formations, according to a statement made by Major General Everett S. Hughes, Chief of the Army Ordnance Department.

It is anticipated that some of the bombers of the future will fly at altitudes far above effective antiaircraft gun ranges. It is difficult now for our pursuit craft to attack enemy bombers flying in formation because of the protection furnished by enemy bombers to each other, Army airmen state.

In order to solve this problem, the scientists of the Ordnance Department's Ballistic Research Laboratories at Aberdeen Proving Ground plan the development of a guided missile which would carry a charge intended to be exploded in the midst of an enemy bomber formation where it would be highly destructive.

Ordnance scientific strategists think that if enemy bombers are prevented by the threat of such a weapon from flying in formation, they will become vulnerable to the attack of individual fighter aircraft.

The Ordnance Department is now testing rockets with potential ranges of 200 miles at White Sands Proving Grounds, N. M., but the rockets of the future are expected to travel thousands of miles. A joint Army-Navy Commission of which the Ordnance Department is a member is searching the United States, Caribbean and Pacific areas for a range where it will be possible to test contemplated rockets over a distance of 2,000 miles.

Long-range planning by Ordnance scientists, however, forecasts the ultimate range of guided missiles to 20,000 miles—weapons capable of circling the globe.

*Army Times.

U. S. Navy Photo

The "Tiny Tim" rocket—a projectile ten feet long and weighing 1,200 pounds—unloosens a demonstration of its offensive firepower from this Navy F-4U Corsair.

ROCKETS AT WAR*

IF any one weapon symbolizes the flaring crash and swift destruction of World War II it is the rocket.

Every major participant used rockets. Each nation developed rocket weapons in answer to its tactical and combat needs. The Russians pioneered in the firing of antitank rockets from planes and in the use of massed banks of rockets for preassault barrages. The British used rockets for defense against attack from the air at a time when there were only 500 antiaircraft guns in the United Kingdom. With their *Luftwaffe* driven from the skies, the Germans employed the long-range V-2 weapon to attack England's cities. The Japanese futilely attempted to use rocket artillery to defend their island outposts.

The United States, too, developed and introduced a great variety of rocket weapons. By the time the war ended, American soldiers, sailors, and marines had fired millions of rockets at the enemy. For those rockets, our armed forces could thank the teamwork of American science, industry, and the military at home.

When the Japanese attack on Pearl Harbor catapulted the United States into the war, our Army and Navy had not a single rocket in service use. Plans for rockets were limited. By VJ Day, the Army was procuring rockets at the rate of $150,000,000 a year. The Navy had 1,200 war plants turning out rockets at the rate of $100,000,000 a month.

There was "Tiny Tim," a 1,200-pound aircraft rocket, a weapon which gives a fighter plane the punch of a 12-inch gun; other aircraft rockets; a "Super-Bazooka," more lethal and accurate than the original infantry weapon; the Navy's new rocket gunboats, the LSM-R's, firing 5-inch spin stabilized rockets from automatic launchers at the rate of 300 rounds per minute.

The Rocket's Advantage

A principal advantage of the rocket is its lack of recoil.

Anyone who has fired a gun knows that the burning of the powder in the combustion chamber drives the bullet out of the barrel and that the reaction to this forward push against the projectile is a backward push against the gun—and the person or the gun-mount holding it.

Compared to a rocket, the speed of combustion in a gun and the gas pressure developed are extremely high.

Because of the recoil and the high pressure, guns and gun-mounts must be strong—which means weight.

A rocket is without recoil in the sense that no metal parts are pushed backward. One might say that a rocket reverses the recoil effect. It shoots gases backward at high velocity and is itself pushed forward by the recoil.

Lacking recoil, a rocket can be fired from a simple, light tube or trough which serves merely to point the rocket in the right direction when it starts its flight. As a consequence, rockets may be fired from structures which could not hold up the weight of a gun and its recoil-damping mechanism, nor withstand a gun's recoil force.

The comparatively light weight of rocket launchers gives the rocket a mobility enabling it to go many places impossible to a gun.

Disadvantages of Rockets

Although rocket launchers are usually lighter than guns, the rockets themselves, because of their motor weights, are usually heavier than shell and bombs of equivalent size and effectiveness. For repeated firing from fixed locations, this weight differential may complicate the problem of ammunition transport.

The blast of high-temperatures, high-velocity gases from the rocket is a hazard and inconvenience. Launchers must be so mounted as to leave a clear space behind them, or blast shields must be provided. Also, the flash of rockets may reveal firing positions.

Many rockets are slower than equivalent gun projectiles and hence less effective in the penetration of hard targets.

*U. S. Rocket Ordnance. Joint Board of Scientific Information Policy.

Although forward fired aircraft rockets have accuracy comparable to that of guns, most ground-fired rockets do not; a large number of rockets must be fired to hit a point target. This lower accuracy in ground fire, however, is of little consequence when it is desired to saturate an area target.

Rocket Characteristics

A look at an assortment of standard American rockets will show that their weights range from three to 1,300 pounds, their diameters from two to 12 inches, and their lengths from one to 10 feet. In many rockets, most of the length is in the motor. In some, the motor is of smaller diameter than the head.

The velocities of American military rockets vary from 65 to 1,500 feet per second and their maximum ranges in ground firing are from 40 yards to 10,000 yards.

ROCKET ARMAMENT FOR AIRCRAFT

When the scientists of National Defense Research Committee and their Navy colleagues produced "Tiny Tim," latest and biggest American aircraft rocket, it was as if they had put wings on a pair of 12-inch guns and lengthened the guns' range to that of a medium bomber.

This giant rocket was the culminating achievement, as the war ended, of a program of aircraft rocket development which gave the American fighter plane the ability to hurl at an enemy target more high explosive than is carried in a salvo from a light cruiser.

"Tiny Tim" was science's answer to the fighting services' demand for "a really big rocket."

Here, first told publicly, are its vital statistics:

"Tiny Tim's" over-all length is 10 feet 3 inches; its diameter is only a quarter-inch less than a foot. Its weight is 1,284 pounds.

"Tiny Tim's" usual head, one of several, is a semi-armor-piercing bomb with a total weight of 590 pounds, of which 150 pounds is an explosive charge of TNT. A charge of 146 pounds of powder drives it through the air. Though its development was not completed until shortly before the end of hostilities, "Tiny Tim" was on hand to hit the Jap on Okinawa.

Rôle of Aircraft Rockets

From early in 1944, on through the remainder of the war, forward-firing aircraft rockets played a significant and increasingly important part. First used in Burma, aircraft rockets later did their bit in the Normandy invasion and the advance across France and into Germany, in the Mediterranean theater and the invasion of southern France, they went to the Pacific where they really came into their own in the Saipan-Tinian-Guam operations and those that followed.

Aircraft rockets were a valued supplement to the bombs, machine guns, and cannon of the military airplane. Rockets are more accurate than bombs, but weight for weight do less widespread damage. Rockets are less accurate than machine guns and cannon, but pack a bigger punch.

Aircraft rockets were especially effective against warships up to destroyers in size and against smaller cargo, transport, and escort ships, or against large warships to silence their antiaircraft batteries.

In attacks on enemy airfields, rockets were particularly useful to destroy radios and radar installations and smaller buildings, parked planes, and fuel dumps.

Aircraft rockets were valuable in attacks on tanks, light guns, concrete pillboxes, and locomotives.

Other Rockets

Other rocket developments by the California Institute of Technology, and by another division, known as Section H, were as follows:

A rocket, known officially as the 5-inch HVAR (High Velocity Aircraft Rocket), was developed—and the vigor of its blast quickly won for it the respectful title of "Holy Moses." It was six feet long, weighed 140 pounds, and had a velocity of 1,375 feet per second. It went into combat use in July 1944.

Another, the 115mm aircraft rocket was developed to meet the demands of the air forces for higher velocity and better accuracy than the M8, especially against moving targets at greater ranges. Never used in combat, it could pierce five inches of homogeneous armor plate.

Finally, squadrons equipped for firing "Tiny Tim" sailed for the Pacific on the carriers *Franklin* and *Intrepid*. The *Franklin* was struck by a Japanese dive bomber before its planes could fire "Tiny Tims" in action. But the planes of the *Intrepid* did launch "Tiny Tims" against the enemy on Okinawa. Unfortunately, the results could not be accurately assessed. There were, it seems, so many things being thrown at the Japs on Okinawa that it was impossible to distinguish the wreckage caused by "Tiny Tim" from the general destruction.

D Day, Thunderbolts and HVAR's

Both American and British rocket-firing support groups, with Navy shells screeching overhead, moved up to the Normandy beaches and turned them into flaming floors of fire.

Shortly after D Day a few Thunderbolt fighter planes were equipped with eight HVAR rockets apiece. They were especially effective in supporting the breakthrough at St. Lou. One or two Thunderbolts hovered constantly over the smashing, advancing tanks of the Third Army and attacked German heavy tanks and 88mm antitank guns when they threatened to hold up the American advance.

Numerous attacks were made early in July on tanks, locomotives, rail yards, bridges, and airfields, and spectacular results were attained. The P-47 group scored hits on some of the heaviest German tanks, knocking them out of action, thus aiding our ground forces to move forward.

P-47s Attack

On July 17, 12 aircraft, carrying four rockets each, attacked the rail yard at Tiger-Quail. A direct hit was made on a flak tower on the first run, silencing it. In subsequent runs 25 locomotives were damaged, also three repair shops and a roundhouse. On the following day 12 aircraft attacked the airfields at Coulommiers. Thirty-seven rockets were launched at 1,000-yard range from a 30° dive. One large hangar, four small hangars were hit, an Me-110 and a fuel dump destroyed. Later a rocket was fired from 800 yards at two staff cars, passing through the first and exploding in the second. A rail bridge at Montford was claimed destroyed by seven rockets.

On July 25 and 26 a total of 64 rocket sorties were flown, destroying 12 tanks, damaging 13, scoring many near misses, and destroying three and damaging three other vehicles. From then on these rockets were continuously employed by the AAF in the European theater, with devastating results.

As more and more installations and rockets reached the forward lines, the effectiveness of the HVAR became more apparent. In addition to the actual damage inflicted on enemy material, the personnel of the German ground forces had such a tremendous respect for this new weapon that upon the approach of a rocket-bearing aircraft, it was reported, they would frequently leave their vehicles and guns in headlong flight for the security of foxholes and other hideouts.

P-47s firing 5-inch high velocity aircraft rockets also were used extensively in helping to turn back the German counteroffensive in August.

From February 1944 to the end of operations in the Pacific, aircraft rockets were an important weapon. Navy TBFs and TBMs fired them in the Marshalls, Palau, New Guinea, Carolines, and Marcus-Wake actions. In the Marianas operation, from June 11 to August 1, Navy planes fired a total of nearly 5,000 rockets against the enemy. By that time, rocket-firing F6Fs were in action and joined in this first large-scale demonstration of the aircraft rocket as a weapon for close-support work. Aircraft rockets, though in considerably lesser numbers, were used in actions in the western Carolines, July 25 to 28, and the Marianas and Bonins, July 29 to August 3.

Blasting Out the Enemy

As a weapon to dislodge the enemy from well-fortified positions, and to support our ground forces, the rocket was used more widely than in any other application and was ideally suited to its task. When our forces landed on Saipan, Guam, Tinian, Iwo Jima, and Okinawa, they found the Jap burrowed in caves, blockhouses, and pillboxes. These were artfully camouflaged and difficult to detect, so well protected that only direct hits were effective, and well defended by antiaircraft guns. Aircraft rockets with their accuracy and penetrating power proved superior to bombs against such targets. Effective and close liaison was set up between the ground forces and the carrier forces supporting them. Wave after wave of rocket-equipped fighters flew in at low altitude sending their rockets into the heretofore invulnerable Japanese positions that were taking such a toll of our advancing ground forces.

U. S. Navy Photo

The new LSM (R) is shown launching rockets with automatic firing and remote controlled rocket launchers. On island landings, such firing moved the Japs far back.

The ground forces soon learned the value of the aircraft rocket and the rocket planes were called upon whenever tough obstacles presented themselves. An air coördinator, armed with rockets with smoke heads, was kept over the target continuously during the duration of the strike. Radio contact with the ground forces indicated the targets which were giving them the most trouble and which they wanted wiped out. The air coordinator marshalled his rocket planes, made an approach with smoke-head rockets to indicate the exact target, and left the rest to the planes armed with rockets with high explosive heads.

ROCKETS IN AMPHIBIOUS WARFARE

The Crucial Interval

Fired from American landing and support craft in the amphibious operations of World War II, barrage rockets saved thousands of American lives. In the Pacific, they were one of the factors which caused the Japanese to change the pattern of their resistance to American landings. With barrage rockets, American commanders were able to drench landing beaches for considerable distances inland. Barrage rockets helped give

assaulting soldiers and marines the fighting chance they needed to win a toe hold without that bloody slaughter in the surf and on the sands which made American leaders, after Tarawa, wonder how we could continue to pay the human cost of island conquest.

It became grimly plain, as American forces fought their way from island to island, from landing to landing, in the Pacific that the crucial phase in amphibious operations is that interval between the moment the naval and air bombardment must be moved inland and the time the first assault waves hit the beach. It is that interval which gives the beach defenders the chance—as at Tarawa—to organize and pour a murderous fire into the landing forces.

The barrage rocket answered the vital question posed by that interval. It enabled small craft, for the comparatively short period of the actual landings, to strike with the hitting power of destroyers against enemy strong points within small-arms range of the landing beaches. Before the close of the war, the enemy had paid final tribute to the effectiveness of the barrage rocket. The Japanese first line of defense—as at Okinawa—was pulled back from the beaches out of rocket range. Soldiers and marines came ashore against astonishingly light opposition—only it was not astonishing. The barrage rocket had imposed its powerful logic on enemy tactics.

Okinawa

In the last great amphibious operation in the Pacific, the conquest of Okinawa, rockets really came into their own. Here were combined to a degree never before realized the use of rockets on land, from the air, and from the sea.

A flotilla of 12 rocket ships went into action at Okinawa on March 26, 1945, and for the next 12 weeks poured ashore in support of land operations a total of more than 30,000 rockets.

In the closing days of the Okinawa campaign, four ships of the rocket fleet were assigned to the Tenth Army Artillery section. Directed by artillery aircraft observers, the rocket ships loosed day and night bombardment fire against last-stand Japanese troop concentrations.

It is noteworthy that, while eight of these rocket ships were equipped for firing improved, fin-type rockets, four of them were fitted to fire spin-stabilized rockets—representing a development in rocket design of major importance. These four ships, each with an installation of 85 automatic launchers, could get off a salvo of 1,020 5-inch rockets in approximately one minute.

Super-Rocket Ships

The part played by the rocket ships at Okinawa concluded the combat story of shipborne rockets in World War II, but it is not all of the story. For, good as the rocket ships were, they were hurriedly contrived interim vessels. On their way across the Pacific when the Japanese sued for an end to hostilities were more examples of the surprise weapons which never had a chance to hit the enemy. These were the first of 48 super-rocket ships planned by the Navy. These LSM(R)'s pack an even greater punch than the ships that fought at Okinawa. Each ship carries 40mm and four 20mm twin mounts, four 4.2-inch chemical mortars, a 5-inch dual purpose gun, and 10 rocket launchers, continuously fed and automatically fired, and aimed by remote control, each capable of firing 30 spin-stabilized rockets per minute, or 300 rockets per minute per ship.

ROCKETS FOR GROUND WARFARE

The explosive powder and the 4,000-yard range of the Army's folding-fin 4.5-inch aircraft rocket indicated that it could be used as a ground force weapon to supplement the artillery.

As compared with artillery, the rocket lacked range, velocity, and point accuracy, but the absence of recoil made possible the launching of rockets from lightweight devices which were easily moved and quickly set up in places where artillery could not go. Furthermore, by massing a number of launching tubes or rails on a single mount it was possible to fire a great many rockets from one launcher in a very short time.

When such multiple launchers were used, the inherent dispersion of the rockets became an advantage for certain types of fire; for without changing the position of the launcher the rockets were spread over a beaten zone of predeterminable size. Rockets were able in this way to lay down a drenching fire upon an area target such as a patch of woods, a town, or a supply depot so quickly that enemy personnel had no time to take cover. A similar concentration of fire, known as timed fire, could be laid down by artillery, but only after elaborate preparations. Rockets gained the same effect in less time and with only a fraction of the personnel.

The Pacific Theater

The rocket's ability to hurl heavy projectiles from light launchers provided a countermeasure to the Japanese tactic of holing up behind coconut log bunkers deep in the jungles of Pacific Islands. The folding-fin 4.5-inch rocket had the power to blast these bunkers, and the Ordnance Department developed an expendable plastic tube launcher in which the rocket was shipped and from which it was fired.

The advantages of spin-stabilized rockets over finned types for amphibious warfare—ease of handling and better accuracy from shorter launchers—were equally valuable in land warfare. In late 1943 the Army Ordnance Department initiated development of its 4.5-inch spinner. In comparison to the 4.5-inch folding-fin rocket, the spinner, though it retained about the same total weight, carried a heavier payload with better accuracy to a greater distance—5,250 yards instead of 4,000. This increased range allowed more flexibility in the choice of firing positions; it made it possible to fire from positions beyond the range of most enemy mortars.

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Bazooka Versus Tank*

Among the now-it-can-be-told weapons of the American rocket family, is the super-bazooka, bigger and better version of the foot soldier's famed tankbuster.

BY their surrender, the Germans and Japs missed feeling the impact of a rocket which travels at almost twice the speed and carries double the explosive payload of the standard bazooka projectile; which has an effective range of as much as 700 yards, instead of the 200 to 300 yards of the regular bazooka; and which can function safely through a considerably wider temperature range, thus affording greatly increased protection against the dangers of motor explosion and blast. Though the super-bazooka retains the 2.36-inch diameter of the original bazooka, and is fired from the same launcher, it is propelled by a larger motor, and its heavier explosive charge can penetrate thicker armor plate.

Another development of the original bazooka—still secret at the war's end—is a super-powered rocket of 3.5 inches in diameter with greatly increased power to penetrate armor plate and reinforced concrete.

The super-bazooka was the joint product of Section H, which produced the design for the motor, and Division 8 of the National Defense Research Committee, which developed the far more powerful head. The 3.5-inch rocket was designed by the Army Ordnance Department.

*U. S. Rocket Ordnance.

Using a knocked-out German tank in an action that was staged, an American trooper blows off the tank's track, seen on the left, with a hit from a Bazooka rocket.
Signal Corps Photo

Bazooka Development

To arm United States infantry to fight tanks on more nearly equal terms, the Army Ordnance Department, in early 1941, had under development a rifle grenade, carrying a "shaped charge" of high explosive. A cone-shaped cup hollowed in the front face of the explosive filling focussed the blast energy into a narrow beam of great penetrating power.

These rifle grenades had too much recoil for field use as a shoulder weapon. Recoilless rocket propulsion was suggested, tried, and adopted. Colonel Skinner, then an Ordnance Department major, and Lt. (now Major) E. G. Uhl, with Section H at Indian Head, undertook the development of a suitable rocket motor.

Following unsuccessful attempts to launch these rocket grenades from attachments to the service rifle, it was concluded that a separate launcher would be required.

To protect the gunner from the rocket blast, the launching tube had to be longer than the maximum burning distance of the rocket motor. To be portable and easily aimed from the shoulder, the launcher, and hence the burning distance, had to be short. By the use of a charge of several thin-web tubular grains of solvent extruded powder in a motor about an inch in diameter, the burning distance was made short enough for a 54-inch launcher, soon dubbed "the bazooka."

This launcher was designed to be fired from the

shoulder and to discharge the rocket blast behind the gunner. It could be sighted and swung with a moving target as easily as a rifle.

The first model of this weapon, despite recognized imperfections, was rushed through production in 1942. It was used in the first Allied landings in North Africa. The weapon soon became famous for its tank-stopping power in Africa, Europe and the islands of the Pacific.

As is the case with most new weapons, improvements were necessary and development work was continued at high priority. Blast was particularly troublesome, especially at low temperatures which caused the powder to continue burning after the rocket had left the launcher. This was eliminated by using faster-burning powders. One such fast-burning powder, developed by NDRC's Division 8, was a new solvent-extruded powder containing a high percentage of special ingredients—this powder shortened the burning distance so much, even at extremely low temperatures, that it earned the name of "blastless bazooka powder."

Debut of the Bazooka

This was the weapon whose effectiveness was demonstrated first in the Allied landings in North Africa in 1942, knocking out pillboxes, tanks, and other enemy strong points.

In spite of its short range—it is most effective within 200 yards—the bazooka in the hands of concealed marksmen stopped enemy armor, gave a lift to the morale of the GI, and was feared by the opposition.

The success of the bazooka in action is best indicated in the unadorned stories of the men who used it. From his European combat experience a private recalled: "We had been hard hit and all of our bazooka men had become casualties. This Mark VI tank was really giving us a going over, and something had to be done about it. Although I had never used a bazooka before, I knew how to handle it. So one of my buddies loaded the weapon for me and I crawled up a ditch until I was so close to the German tank (he was within 40 yards) I couldn't miss, and let them have it. That one round really did the trick." The private won the Bronze Star for his feat.

Similarly, a sergeant, a mortar squad leader, had never fired the weapon, but during a savage German counterattack on American positions he halted a German Tiger with two rounds at a distance of 75 yards.

As the heavy tank lumbered toward him spearheading the Nazi attack, the sergeant seized a bazooka dropped by its wounded operator and fired at the track. The tank's machine gun as well as supporting German riflemen opened up on him. He reloaded and sent a second rocket crashing home, immobilizing the tank. The crew abandoned it and doughboy riflemen smashed the counterattack. The sergeant won the Silver Star.

Bazookamen found that their improved weapon frequently performed beyond their expectations. Combat reports tell of holes driven through a 6-foot pillbox wall, of masonry walls blasted with holes big enough for a man to crawl through, of tank crews killed by fragments spalled off the inside of 8-inch armor plating although the shaped-charge did not penetrate the armor.

Bazooka Versus Pillbox

Experience in the Pacific showed that even when the bazooka could not destroy the heavy Japanese pillboxes, its concussion could stun the occupants and give infantrymen an opportunity to rush in and dispatch the enemy at close range. The bazooka was highly effective against Japanese tanks, which were more lightly armored than the German.

In one frantic action on Luzon, soldiers of the 6th Infantry Division fought a close-range battle against Jap tanks, which, firing at point-blank range, were mowing down American antitank gunners as fast as they manned their weapons.

"We tore into them with rifle grenades and bazookas, the only weapons we could use under the circumstances," a sergeant reported. His battalion claimed 57 Jap tanks in the battle.

Combat experience was translated into modifications which made the bazooka a more convenient weapon. A two-piece launcher permitted easier carrying and better concealment from observation than was possible with the original one-piece launcher. A trigger-operated magnetic replaced battery ignition. The sights were improved.

Versatility of the bazooka was increased with the development of a bazooka smoke rocket loaded with white phosphorus; this was effective against Jap bunkers and caves. Ingenious American soldiers projected telephone wire over stretches of exposed ground by fastening the wire to a dummy rocket. They used dummy rockets to carry detonating cables out over minefields where the cables were set off, exploding the mines.

Nazi Imitations

A new step in the development of shape-charge antitank rockets began with the German capture of American bazookas in North Africa, particularly at Kasserine Pass. The *Panzerfaust* and the *Panzerchreck* were German bazookas based upon the American. Appearing some months after the North Africa action, they carried a heavier shaped charge which produced greater penetration, but were lower-powered and lacked the range of the American 2.36-inch rocket.

The American answer to heavier German armor and to Germany's large rockets consisted of the two improved bazooka rockets already mentioned—the super-bazooka and the 3.5-inch rocket.

The superiority of the super-bazooka motor over that of the original bazooka is achieved by the use of an improved igniter and a heavier charge of propellant, the latter consisting of many thin disk-shaped grains, stacked in a stepped-back column to allow freer flow of the gases toward the nozzle.

The Intelligence School

by Lieutenant Julius S. Gassner*

THE new Intelligence School at Fort Riley, Kansas, was patterned from the War Department Military Intelligence Training Center, which during the war, at Camp Ritchie, Maryland, mass-produced intelligence specialists. When the Maryland center was inactivated in the fall of 1945, previously made plans were carried through for a peacetime intelligence training center under G-2, Army Ground Forces. Under them the school, after a brief establishment at Fort Benning, Georgia, where adequate facilities were not available, was moved to Fort Riley. Here, on March 29, 1946, the first graduates of the first AGF Intelligence School received their diplomas.

In this first graduating class were 45 officers and 50 enlisted men, who had completed a well-rounded nine weeks' course. The course ended with a 36-hour, continuous command post exercise, during which the students established and operated one corps and four divisional G-2 sections, and two regimental S-2 sections, complete with Photo and Order of Battle teams.

The school has been given the status of an advanced service school, and it is believed it will train about 250 officers and 250 enlisted men during the school year. Major General I. D. White, Commandant of The Cavalry School, and former commander of the 2d ("Hell on Wheels") Armored Division, is also Commandant of The Intelligence School.

The students enrolled in the first course were offered a choice of three specialties: General Subjects, Photo Interpretation and Order of Battle. The nine-week course was divided into periods of three weeks and six weeks. During the first three weeks the students were introduced to two of the specialities—Photo Interpretation and Order of Battle—and received an over-all view of the entire intelligence cycle, from the collection of initial information to the final dissemination of completed intelligence. The comprehensive view thus presented helped prepare them for whichever of the three specialties they chose to take during the last six weeks of the course.

The proportion of students who specialized in Photo Interpretation and Order of Battle was roughly 20 per cent, equally divided between the two. The remaining 80 per cent chose the Department of General Subjects.

Most of the school's work was practical, with a minimum amount of time spent attending lectures. This was especially true in photo interpretation, in which students constructed a 1/5,000 terrain model of the Fort Riley-Junction City area.

The Order of Battle enrollees devoted more than a quarter of their time in working out problems, most of which were based upon actual situations in which original documents captured in the Pacific and European theaters were employed.

In the Department of General Subjects, students observed demonstrations of the function of the various intelligence agencies, went on night patrols, wrote periodic reports, and made observation flights over the surrounding countryside. This gave considerable stability to the extensive background-knowledge and theory which is inherent in advanced intelligence training.

The instructors who were to serve on the school's staff brought with them their own varied experiences, which covered virtually every field in intelligence work—and ranged from an analysis of German flak to scouting and patrolling in eastern New Guinea.

No radical changes have been made in the Second Interim Class of the school which began April 8, and graduates in mid-June.

Beginning in September, 1946, however, courses are to be organized along entirely different lines. An Officers' Course for four and one-half months will be conducted each fall and spring. It will begin with six weeks of training in reconnaissance and observation, which is to be conducted under the supervision of The Cavalry School. This preliminary work will stress the reconnaissance tactics of all arms in every kind of operation. It will include reconnaissance of all types; message writing; occupation and operation of an observation post; scouting and patrolling; and allied subjects. At the conclusion of the course in reconnaissance and observation, all officer graduates will attend the Advanced Intelligence Course, which will be conducted by The Intelligence School. This course will provide, under the Department of General Subjects, instruction in detailed staff duties, intelligence functions peculiar to all arms, the use and integration of intelligence agencies, counterintelligence, air-ground liaison, and allied subjects. The Department of Photo Interpretation will give the equivalent of a three weeks' course in the technique of photo interpretation. Future officer students will spend the equivalent of two weeks of study under the guidance of the Department of Order of Battle.

The purpose of the Officers' Course is to qualify personnel for duty as G-2s and S-2s of units from battalions to divisions, inclusive.

Plans are to offer two specialists courses for enlisted men. The Photo Interpreter Course of six weeks will qualify enlisted men as photo interpreter specialists.

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Enrollees will receive instruction in basic combat intelligence, military and terrain identification, mechanics of photography, preparation of controlled mosaics, preparation of terrain models, and allied subjects. The combined Order of Battle and Prisoner of War Interrogators' Course, of six weeks, will include such studies as basic combat intelligence, order of battle techniques, and the organization of selected foreign or type armies as well as the technique of interrogating prisoners of war. The course will qualify students as order of battle specialists, and as experts in the technique of interrogating prisoners and processing captured documents.

For demonstrational purposes and as an aid in instruction, the school will employ fully equipped Photo Interpreter, Interrogation and Order of Battle teams as well as a counterintelligence corps detachment.

It is felt that the decision to locate The Intelligence School at Fort Riley is an extremely fortunate one. For both The Cavalry School and The Intelligence School have a common interest in reconnaissance, observation and security, and a coördination of the two schools therefore appears desirable.

Sand Models

THE latest addition to training at The Intelligence School at Fort Riley, Kansas, is a course in terrain modeling, which calls for speed, initiative and accuracy in the construction of scale models that are perfect to the minutest detail.

The models prepared by the students serve as useful aids for a large-scale intelligence field exercise which is held at the conclusion of classroom instruction.

The models, designed on a scale of one unit to 10,000, are constructed almost entirely of cardboard and sand and their three-square foot sections represent an area normally assigned to a division.

Students are taught to model terrain so that they can give troops not thoroughly schooled in the reading of contour maps an accurate picture in miniature of terrain over which they may operate.

The terrain to be used for the model is projected from a map through a balopticon onto thin paper and from there traced onto the model base.

After contour lines have been drawn on the base, cardboard is cut to form the hill effect on the model. Over the cardboard is spread sand mixed with glue, and the necessary coloring is added to produce the desired effect for trees and other growth.

A bluish or dark green hue is used to designate coniferous trees. The deciduous type of tree is shown in a yellowish or light green tone. To represent trees in spring, more yellow coloring is added; purplish brown tone is used to show trees in the fall; and a rich green in the summer.

All prominent objects on the landscape are shown on the finished model, with each building and hedgerow in its proper place.

Buildings are cut in miniature from wood and glued to the model, and roads and streets are formed by tracing a slight depression in the model base and then sprinkling it with talcum powder. Varying color shades are employed to denote different fields. Light brown may be used to show the location of ripening wheat or a plowed field while a greenish hue may represent an alfalfa field or pasture land.

Preparation of the sand is a tedious job. It must be sifted carefully so that no large pieces are contained in the finished product. The glue must be prepared to the correct consistency, and that is one of the student's many tasks. He has to keep double boilers of glue simmering on the laboratory stove, constantly adding ingredients and forever stirring.

Sand is the principal covering mixture used here, but sawdust, clay, pastelon, plaster of paris, pulverized nutshells, old paper, soft coal dust, ground coral, ashes or cinders are likewise recommended.

Glue is the best binder, but molasses or egg or resin will do just about as well. Sand and glue are the easiest to obtain here, but under field conditions students may be forced to revert to a score of mixtures and binders.

Trees can be made from sand, pebbles, pieces of sponge, Norwegian lichen, small branches, vegetables, paper, wire or a hundred other materials, depending upon the scale of the model and the type of tree.

Paint alone may be used to represent grass, but fine sand, wood flour, cement or any powdered substance will also serve the purpose.

Airborne Possibilities*

by Lieutenant Colonel John H. Swenson, Cavalry**

WITHOUT in any way contradicting or in the least detracting from the epic accomplishments of the airborne forces, an excellent résumé of which was presented by Lieutenant Colonel Cornett in the December 1945 issue of the *Military Review,* I should like to point out that the full possibilities of the arm have by no means been developed.

As was pointed out by Colonel Cornett, airborne forces are the child of the recent war. Their development was the result of a crying need. Hence it was largely determined by the exigencies of the situation. Technical developments, though amazingly rapid, were unable to provide the means for accomplishing all that was desired. This has left the airborne forces with certain inherent limitations, the outstanding of which are a lack of sufficient supporting fire, and a very limited tactical mobility, as well as a precarious and tenuous lifeline of supply.

Toward the end of hostilities, technical developments to overcome these limitations were just emerging from the test stage. They did not emerge fully from the crucible of combat usage. The principal developments referred to are the recoilless rifles and mortars which would have gone far toward eliminating the weakness of limited supporting fire, and the CG 10-A Glider which had the capacity to deliver means capable of providing tactical mobility to airborne forces. The supply situation might well have been remedied by the employment of newly developed technical means of identifying delivery points for air transported supplies.

In order to explain more fully what these remedies can mean in airborne developments, let us now take an hypothetical unit of a truly revolutionary type and consider its capabilities. For this purpose I would like to use a Horse Cavalry Glider Squadron. Let us say that the squadron is composed of a Headquarters, three rifle troops, and a heavy weapons troop. Its armament consists of sabers, M1 rifles, submachine guns, light machine guns, 4.2 recoilless mortars, and 57mm and 75mm recoilless rifles. Let us also assume that it is fully mounted and needs no transportation other than its horses.

The CG 10-A, which was constructed to carry a 6x6 2½-ton truck or 12,450 pounds of freight, makes transportation of such a unit a possibility. In the same space and within the same weight limitations, it would be possible to carry eight mounts with riders or loads. Assuming the combat strength of such a squadron would be 632 men and 800 horses, the squadron could be transported in 100 CG 10-A Gliders.

Now let us take a situation in which it would be feasible to employ any airborne force. The basic requirement is that we have air superiority, or can establish air superiority during the time we are convoying our troops by air, and can either maintain or reestablish that air superiority for a sufficient length of time to enable us to re-supply the airborne troops. The next requirement is that we can reasonably ascertain that the terrain on which we land these troops will be suitable for the landings, and that the area in which these landings take place will be sufficiently remote from enemy installations to enable the troops to assemble and organize before they are attacked in force.

Because the force we are considering is mounted, and each man has in his mount a rapid means of transportation, these troopers should be able to unload from their gliders and assemble or rally in considerably less time than Infantry troops committed to action by the same method. In fact, because of their mobility they might well capitalize on a deliberately dispersed landing. Under certain conditions troops or even platoons might land separately and destroy bridges and communication nets while en route to the squadron rendezvous. Were this done, it would further add to that pandemonium in the defender's mind that accompanies an airborne landing. It seems fair, then, to assume that their chances of success for accomplishing an assembly, the most critical phase of an airborne operation, would be equal to or better than that of any now existing glider unit.

Having then established the feasibility of landing and organizing our theoretical force in enemy territory, let us next turn to their capabilities. The best historical guide to the capabilities of such a force when deep in enemy territory can be found in the history of the Russian Cavalry raids behind the German lines. Although Russian security has prevented us from gaining many specific facts, enough information has seeped through to make it reasonably certain that when Horse Cavalry units were able to place themselves in the rear of the main German battle positions they were able to operate successfully against the highly mechanized and thor-

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*Military Review.

**Instructor, Command and General Staff School.

oughly modern German war machine. The main factors which enabled them to do this were surprise and mobility, which further contributed to the element of surprise.

Let us now change our role to that of the enemy G-2. Let us assume that we know the foe has a Horse Cavalry Glider Squadron, and that he has sufficient air force to enable him to employ it at this time. If we are to state the enemy's capabilities, we must state that he is capable of attacking with a strength comparable to one battalion at any point within an arc the radius of which is the operational radius of his transport aircraft and the center of which is his forward air bases. You must remember that you are the enemy G-2. Imagine your Commander's reaction to your profound pronouncements! Will he attempt to allocate sufficient troops to guard each and every vital area and installation within this area? Can he afford to? Will he build an unbreachable antiaircraft screen against this threat? He will undoubtedly try, but unbreachable static defenses have not yet proven practical. Will he, or indeed can he, construct obstacles which will render all possible glider landing fields unusable? Can he afford to ignore this capability?

Now let us reverse the situation and change our hats once again so that we become staff officers of an invasion force about to strike Northern Europe. In order to bring this closer to home for more of us, let us consider that it is late May 1944, that our forces are marshaled and poised for the invasion of Normandy. Assume that late one afternoon we receive information that hostile horse glider forces have landed in a specific area. When we consider the probability that this glider landing would be coordinated with diversionary and deceptive measures, we might well allow several hours during which we would be uncertain as to the actual location of the glider landings. At any rate, if the landing areas had been well selected and the operation well timed, it would be impossible to counter this action before nightfall. This, then, would leave us confronted with the task of ascertaining their capabilities for the period between their landing and daybreak the following morning.

Based on known Horse Cavalry actions, it is fair to assume a rate of cross-country march during darkness, off roads, and without benefit of bridges, of four miles per hour.

With ten hours between the landings and daybreak of the following day, this enemy force, which depends on neither roads nor bridges, might well evade our best efforts to fix and destroy it. It appears patent that we can no more ignore this small but potent force than could a man who suddenly realized he had a hornet in his trousers ignore that hornet.

We would immediately have to move sizable forces, forces in the process of embarking for an invasion, to protect all vital installations, bridges, communication, and transportation centers as well as headquarters. In addition, we would have to alert all troops within possible striking distance.

Next, we would have to set about to fix and destroy this enemy. Considering his independence of roads and bridges, this would be no small task. In addition to the usual advantages that accrue to the force with both the initiative and mobility, he would have in his favor the fact that forces sent against him would be loath to employ usual aggressive measures in friendly territory. This same condition would almost limit the employment of air forces to a role of reconnaissance.

True, the squadron would have to contend with a hostile civil population. Hence, their movement would continually be opposed and their progress reported. However, judicial and systematic destruction of communications and mining of roads (all part of raiding technique) should go far toward neutralizing the information services spontaneously performed by civilians. Civilian opposition, even considering the Home Guard (good though it was), could hardly do more than harass an organization with such flexibility and cross-country mobility. Hence, it would be necessary to commit a large number of the invasion troops to the mission of locating, fixing, and destroying this squadron.

The eventual outcome of the hunt will not be argued. Certainly the quarry would eventually, and perhaps rather speedily, be brought to bay and smothered. Yet it seems just as logical that before we can corner him, he will have committed considerable and probably serious depredation. However, reflecting upon the closely controlled and clocklike precision of both troop and supply movements so essential during the critical period just preceding and during embarkation for an invasion, it would appear that the greatest damage would grow out of the disruptions and dislocations that his presence would have caused. In fact, we are reminded of Aesop's fable in which the ant bit the hunter on the ankle and disturbed his aim, thereby saving the life of the elephant.

As indicated, this hypothetical operation would eventually come to a bad end. This would be because it lacks the essential element of *mass*—without which all airborne operations eventually become a struggle for existence. Nonetheless, it does illustrate the advantages that accrue to an airborne force when to that force's strategic mobility we add tactical mobility. Mass can be added. If and when it is, logistic support can be provided. We have the means if only we are willing to pay the price.

It is realized that to do so is an expensive proposition, and that both extreme selection and extensive training would be necessary for the establishment of any force capable of exploiting the characteristics portrayed in the example. Yet, would not the results logically expected of them justify their creation within the armed forces of a nation possessed of the material resources capable of their support?

BURMA TRIUMPH*

by Squadron Leader Charles Gardner

ONE of the least known of the theaters of operations in World War II was that of the Southeast Asia Command. The story of the conflict in that theater has yet to be told, but when it is the struggle and eventual victory in Burma will be given an appraisal it well merits. Here was fierce and rugged campaigning that tested the strategical genius of the Allied command and the valor of our fighting men.

Three years of fighting over the devil's own country was finished on May 5, 1945, when the British captured Rangoon and hoisted the Union Jack over Burma's capital. For three and a quarter years the city had been in Japanese hands and had been a focal point in the "Greater Southeast Asia."

When Admiral Mountbatten came to his newly created Southeast Asia Command in the late autumn of 1943, the problems facing him seemed well-nigh insurmountable. Our forces were meager, our responsibilities great.

The Japanese were firmly "in" all over Burma, with great jungles and sprawling mountain ranges forming a buffer against any major Allied attack. A 200-mile belt of the world's thickest natural barrier and two great rivers protected them in the Central Burma plain. Through these ragged mountains and steaming, overgrown valleys there ran, from our side, but two roads and no railways. The Japanese, it seemed, could stay contentedly on their side of the Chindwin, nourished by good internal lines of communication which stretched back to the major port of Rangoon.

On the other side of the jungle barrier—our side—the picture was different. We had no nourishing network of roads and railways, no kindly port close at hand.

Where was *our* supply base?

At Calcutta, 900 miles back! Linked to our fighting front by but one railway, the Bengal-Assam line, already heavily laden with supplies to be flown to China; charged, too, with supporting General Stilwell's drive to reopen a land route to Chungking. What was more, there could be no relief from this state of affairs until we held Rangoon. For the whole of the next 1,300 miles of advance it seemed as if we were doomed to be tied to Calcutta.

Mountbatten took one look at the position and summed it up in a sentence: "the biggest logistical nightmare of the war."

How the Japanese must have smiled when they heard that! How safe they must have felt.

What could the British do? We had the weakest lines of communication that any army had ever had to fight from. We had no roads or space by which to deploy our superior equipment—when we got it. We were sealed off from Central Burma by trackless mountain and jungle. We were vulnerable to sudden attack from across the Chindwin.

On the face of it, then, all that the Japanese had to do was to sit tight, build up supplies on the Chindwin banks and then strike at India through the jungle of which they believed themselves to be all-time kings.

Yet, by May 1945, their dream was shattered. So were three Japanese armies and a Japanese Air Force! Over 120,000 of the Emperor's best troops were dead and Burma was British again.

How did it happen?

The story which follows is an uncolored, simplified account of one of the greatest military campaigns in the history of war. This campaign was planned audaciously, and carried through with courage and resolution by three British Imperial Corps of troops, one Anglo-American Air Force and a few divisions of Chinese, all supported by the big and little (but mainly little) ships of the Royal Navy and the Royal Indian Navy.

The first hurdle Mountbatten had to clear was that of the supply line. The solution of the problem of distance and lack of roads and railways was apparent to all the senior officers—to the "Supreme," to General Slim, GOC of the 14th Army, to Wingate. It was air supply.

"Bring your goods down the chimney," said Wingate, "there's no future on the jungle floor."

And so, painfully (for there were many urgent and competing demands on Allied production) a fleet of Dakota transports was gathered together. Squadron by squadron, British and American, they were assembled behind the lines, in India.

Said the Air Force Chiefs: "Before we can run this fleet of unarmed 'merchant ship' aircraft we must sweep the skies clear of Japanese fighters. The transports can't operate in the face of fighter opposition. First things first: we must gain complete air supremacy, or, further than that, we must have air monopoly."

So, gradually, the combat as well as the transport side of the Air Forces was built up. Spitfires, Mustangs, Beaufighters and Lightnings began to trickle through. Few enough they were, the bare minimum, but enough.

More detailed planning was not possible. The main airfields for the air-lift which was to beat the jungle

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Military Affairs, Journal of the American Military Institute.

were chosen. Bases in India and near the railway were earmarked for the first phase, and it was decided to supply from the Arakan ports and over the Somra mountains for the second phase or the "Central Burma" advance. The complicated organizations for the building of airfields and for the sorting and loading of stores were worked out.

For the purposes of this account, I will set on one side the Northeast Burma campaign of 1944 to 1945: the Stilwell-Wingate offensive which cleared the ground through Myitkyina and Bhamo to China. This important task was S.E.A.C.'s first charge on its charter, and it was a task triumphantly carried out. The first convoy went through to China in January 1945. This Northeast Burma fighting, however, was not concerned directly with the liberation of Central Burma, although our forces there naturally tied down Japanese troops and resources. What must be remembered, however, is that from March 1944, until the monsoon, Wingate's men were "in," and were a major standing charge on our air supply—a charge which had to be fulfilled, for the Chindits had no other resources save those which came by air. They were 200 miles behind the enemy lines.

Let us return then to the central theme: our planned offensive over the Chindwin.

As the air supply of Phase Two of the liberation depended on the Arakan ports of Chittagong and Akyab, those ports had to be freed from enemy menace. That was why, in early 1944, the 15th Indian Corps was pushing down Arakan toward Akyab. About the same time, the Air Forces began their long-term program of clearing the air to prepare for the Dakota "merchant shipping."

But, just as this preamble to our plans was under way, the uncooperative Japanese altered the shape of our commitments. They launched two major attacks toward India: the first in Arakan, where we were getting dangerously close to Akyab, and later, in the Central sector, at Imphal.

These two attacks had both been foreseen, and provided against, but they had the immediate effect of making us follow an enemy lead. In the long run, they speeded the whole business of the recapture of Burma but, for the time being, we lost the initiative.

In Arakan, the Japanese were decisively beaten, but only after they had completely surrounded the 7th Indian Division. The enemy's protecting air force was shot down and so mauled that it withdrew from the struggle early, and the Dakotas kept the isolated 7th going until they were relieved from the north, and a great slaughter of Japanese was made.

Result: on the whole beneficial to us and our plan. Many Japanese fighter aircraft were put out of the way, which saved us the trouble of seeking them out to destroy them, and the road to Akyab was made easier by the weakening of the enemy forces.

But right on the heels of this defensive victory of ours, the Japanese plunged into their Imphal-Kohima show. This was their big push—and a pretty stroke it would have been had it come off. It aimed at bursting into India, and cutting the Bengal-Assam railway line above Kohima, leaving Stilwell and his China road project on the end of a sawn-off limb. En route it would have destroyed the 4th Corps of the 14th Army and might have found the road to Calcutta more or less open.

The Japanese were convinced that success would be theirs. "On to Delhi," cried their radio, and there was no doubt that the shot was, as they say at billiards, "on."

General Slim, however, had seen the Jap chalking his cue for this "winning hazard" for some time. As the enemy surged round Imphal and isolated Kohima, he saw that, if we could hold those two places, this Japanese offensive would be the turning point of the Burma war. What appeared to be a serious reverse to our plans was, in fact, a golden opportunity that would speed up the whole process of liberation—providing Imphal and Kohima were held.

And they were!

The story of that struggle is yet to be told. The air supply machine took over and maintained a daily commitment of over 500 tons at Imphal. The fighters progressed yet further in their long-range task of destroying the Japanese air force, which again came out for a short time and then retired. The Dakotas had a full-scale tryout for air supply and troop movement. During the struggle they moved the 5th and 7th Indian Divisions complete from Arakan to the Chindwin battle. This removal of two of its divisions weakened 15th Corps which was not then in a position to follow up the defensive victory of February with the capture of Akyab before May and the monsoon. Thus their Imphal offensive kept Akyab in Jap hands for a further ten months, but this was now academic, as enemy offensive power in Arakan was broken and Chittagong, the main Dakota port for Phase Two, was no longer in danger.

By mid-June, the Imphal battle was over. The Japanese had lost heavily and had taken crippling casualties without gaining a thing. We, on the other hand, had done more than merely deny the enemy. We had proved the possibilities of air supply. We had killed the Japanese air force (prerequisite number one for the coming Dakota operations in Central Burma) and, on the west coast, we had secured an unmenaced Chittagong. All these benefits had accrued to us as by-products of two defensive actions.

Air Marshal Joubert, in March 1944, when the Japanese were at Kohima, said, "This is the enemy's big mistake. He has come to us and so saved us the difficult and costly business of going into the jungle to find him." He was now proved to be right.

As the monsoon started, the enemy, broken, starving and disorganized, fled back into the jungle belt.

It was an opportunity not to be missed—one of the

great opportunities of war. Rain or no rain, the pursuit was on. Spearheaded by the 5th Indian Division, our men pushed through the jungle, down the mudbath called the Tiddim road, and also down the Tamu road, a monument to our engineering skill. Once again, Dakotas brought the supplies and took out the wounded. The Japanese fled, fighting rearguard actions but still bewildered and defeated.

It was our troops now who were "King of the Jungle." The results of Slim's farsighted training plans, and the inspiring feats of Wingate in Northeast Burma were proving to the world that Japanese invincibility was a myth.

By the end of the monsoon, we were virtually through that jungle belt which the enemy had regarded as an impregnable safety zone in which he only could mount an attack. By November of 1944, we were across the Chindwin and, before us, was the "promised land"—the Central Plain, with the Chindwin and then Irrawaddy valleys flowing flat and invitingly southward to Mandalay and Rangoon.

This was the kickoff for Phase Two.

Six months of good weather lay ahead, there was room to deploy, and the base port of the air lifeline in Arakan was secure. The Japanese air force was already "out," and, in the northeast, Stilwell was practically through to China.

There was one danger—there could be no drawing back. Once the 14th was on its way south, it had "burned its boats." Every yard gained was a yard farther away from the port of Calcutta. There could be no relief from that dismal fact until Rangoon.

In other words, if and when the 14th reached the gates of Rangoon, it would be 2,000 impossible miles from its base port. *It would be entirely dependent upon the Dakotas. If their organization failed or if the safety of Rangoon was not reached before the monsoon of 1945, the whole 14th would be out in the blue.* Air supply might not be able to maintain the Army in South Burma in monsoon conditions, and a "bogging down" short of the objective could easily be the prelude to major disaster.

Mountbatten, Leese and Slim knew the risk, but it was one which had to be taken sooner or later, and now was the time to take it. So, in December, the 14th came over the Chindwin. The die was cast!

General Monty Stopford's 33d Corps crossed at two places, with the 2d British and the 19th and 20th Indian Divisions working together at the start of the plan which was to bring us to Mandalay. The 19th Division, after crossing the river, kept on due east to the Irrawaddy. The 2d Division and 20th Division turned south into the Burma plain. They, too, were headed for the Irrawaddy, but at the point where it bends westward from Mandalay and runs due east and west for 60 miles before turning back again on to its southerly course for Rangoon. On their way they captured the Kabo weir intact—a vital achievement this, as the weir is the basis of irrigation for that great rice-growing plain.

It was now that the 14th Army changed from a jungle to a desert army—not because Central Burma is a desert, but because militarily many of the problems are the same. The open spacious plain lent itself to Libya-like tactics.

Here, able to see 20 miles at a glance instead of 20 yards, they switched all their tactics to the new conditions. Great battles were fought. But by now, our superior equipment could have a real chance: the tanks, the carriers, the armored cars and our aircraft.

The Japanese tried the old stuff—foxholes, trenches and fanatical resistance—but Slim's men cut and thrust round them, forced the Irrawaddy, two to four times as wide as the Rhine, and swept on. And with them, however fast they moved, went that other half of Mountbatten's Burma forces, Eastern Air Command and the all-important Dakotas of Combat Cargo Task Force.

By the middle of January, 33d Corps was crossing the Irrawaddy, the largest of the river barriers. Nineteenth Division, after bloody battles, reached the east side of the river, north of Mandalay, while 2d and 20th Divisions crossed west of Mandalay, over that section of the river which runs east and west. All these crossings were heavily opposed and our bridgeheads heavily counterattacked.

This was a "touch and go" period. On the 2d and 20th Divisions' side of the battle, our flank was wide open to crippling counterattack. That counterattack was never launched. General Stopford in his tactical appreciation had forecast that the Japanese would not realize the weak position of the British flank, and he was right.

With the bridgeheads consolidated, two strong forces moved on Mandalay from the north and west. Nineteenth Division, under Major General Rees, got there first and took the city. Fort Dufferin fell on March 30. The time for the big drive south to Rangoon had arrived.

There was less than two months to go before the monsoon, and 350 miles of enemy-held country to cross. The 14th Army had to average over six miles a day to set the seal on the victories of the previous 12 months.

It was now that General Slim made his surprise stroke. As the three divisions of 33d Corps regrouped in the Mandalay area, he threw in against the bewildered Japanese another corps of the 14th Army.

The 4th Corps under Lieutenant General Frank Messervy had for some time been assembling secretly near the Irrawaddy at Pakokku. From there it made a brilliant dash across the river and flung an armored column 90 miles to the southeast to seize Meiktila. An airborne column was at once flown in, in support. The Japanese south of Mandalay now had their escape road to Rangoon cut and, after a bitter battle for Meiktila, 4th Corps plunged southward toward the Burma Capi-

tal. Meanwhile 33d Corps having regrouped moved across to the western flank and also began a drive toward Rangoon down the axis of the Irrawaddy river. It is doubtful if, for some time, the Japanese realized that they were facing twin drives on the capital, each drive being of a corps' strength.

Fourth Corps, especially geared for speed, with airborne and motorized brigades, leaped down the railway toward Rangoon at an average speed of over 15 miles a day, and by the beginning of May was only 20 miles from the port. Then, on May 2, 1945, Mountbatten sealed the fate of Rangoon. With the monsoon rains already threatening, he launched an airborne and amphibious assault to which the Japanese had no answer.

Troops of the 26th Indian Division captured Rangoon on May 4 and a few days later linked up with Messervy's 4th Corps drive.

The great plan had worked. We had brought our forces 1,300 miles from Imphal on a main basis of air supply. To do it, something like 200 Dakota strips had to be built by British and Indian engineers. The army routine had been to consolidate, build an air strip, receive supplies, and move on. Toward the last days of the campaign, Combat Cargo Task Force was carrying nearly 3,000 tons a day to the 14th Army, and in addition was moving something like 12,000 troops a week.

At the war's end, Southeast Asia Command stood on the threshold of new achievements. Mountbatten was master of the seas and skies. On his right flank, MacArthur reached Borneo. And the strangulation of Japan and of the troops in the territories she had stolen took shape.

Three Years of Jap Imprisonment Little Affected Minds of Americans

From a Report to The Surgeon General

THREE YEARS in Japanese prison camps, most of the time on starvation rations and subjected to frequent beatings, had surprisingly little effect on the minds of more than 4,000 American soldiers who survived the ordeal.

Wherever these men landed in the United States after liberation they were met by teams of medical specialists assigned from the Office of the Surgeon General. A report on the neuropsychiatric findings has been made by Lieutenant Colonel Norman Q. Brill, who was in charge of this phase of the examinations.

Tremendous Will To Live

Considerable importance was attached to early medical contact with the released soldiers because, said Dr. Brill, "never before in this country's history had such a large group been exposed to starvation, torture and humiliation." The psychiatrists were interested in the factors that were responsible for the survival of these men when so many of their comrades, in about the same physical condition when captured, had succumbed. The nearest they came to finding a common factor, however, was what is described in the report as a "tremendous will to live." Otherwise the soldiers differed in about every possible way.

"All of them," said Colonel Brill's report, "lived only for the day. Indeed when one of them would fail to concentrate on or begin to hoard food, or gave way to morbid thoughts concerning the seemingly hopeless situation, he was earmarked by his companions as quite likely to die shortly. A prisoner who would hoard his rice allowance for several meals in order to enjoy the sensation of one large meal was referred to as 'rice happy.' This was generally an indication of the beginning of deterioration and early demise.

Courage The Best Explanation

"When those of lesser spiritual strength became ill they were likely to give up, quit eating entirely, and frequently would die within a few days. One fails to find a scientific reason or an adequate term to explain survival. It seemed to some of the examiners that 'courage' was the best word. It seemed that the only common factor among the survivors was that they had courage. They never stopped in their struggle for survival. They ate anything available, including cats, dogs, silkworms and other things repulsive to normal human beings. When struck with dysentery and malaria they would nevertheless attempt to carry on. This strength and courage had no connection with social background or education."

The men themselves expressed no concern about their ability to readjust to life in the United States. Regardless of the future, they felt, they would meet any situation likely to arise after living through the prison camp years.

Japanese Horse Cavalry

by Major Hal D. Steward*

NEWS DISPATCHES from Northern China at the end of World War II reported that the Russians had captured 17,500 horses from the Japanese Army in that region. Recently revealed Jap documents establish the fact that these horses came from two Japanese cavalry brigades that had been stationed in Northern China all during the war. One of the brigades had been in Manchuria since 1932.

The two Japanese cavalry brigades were the Third Brigade (mounted) consisting of the 23d and 24th Cavalry Regiments, brigade artillery, a machine-gun unit of two companies, a signal unit and a transport battalion; and the Fourth Cavalry Brigade (horse-mechanized) composed of the 25th and 26th Cavalry Regiments, brigade artillery, a machine-gun unit of two companies, a signal unit and a transport battalion. Both brigades, according to Japanese Tables of Organization, had more than 3,000 horses.

The last report on the Third Brigade before the close of World War II was that it was carrying out security measures and reconnoitering the movements of the Soviet Army in the Usuri (Phonetic) region in Northern China. In all probability this unit was captured by the Russians while carrying out this last reported mission.

The Fourth Brigade was last heard of while carrying out a security mission in the Keihansen region of North China. It too was probably captured by Russian troops in North China engagements.

Following is a brief history of these two Jap cavalry bigades. The Third Brigade in 1939, was transferred to the Eastern Border of Manchuria from Morioko and was stationed in the vicinity of Hitoku. In the same year, the "Homohan Incident" unexpectedly occurred and the brigade was ordered to mobilize and advance to the Mongolian Plain to participate in the "Russo-Japanese Clash," however, the "Clash" came to an end while the brigade was en route. The brigade returned to Hitoku and was transferred to Takarawan (about 100 kilometers north of Hitoku). Here, the brigade was assigned the mission of reconnoitering movements of the Soviet in the Usuri Region until the end of the war.

In 1931, the "Manchurian Incident" occurred and the following year the Fourth Brigade was ordered to Manchuria. For the next two years, the brigade participated in the subjugation of the Rebel Army in various sections of Manchuria, and achieved great success, especially at Jehol. Later, the brigade was stationed at Tonan and at Hailer where it carried out unit training. In 1937, the "China Incident" took place and the following year the brigade advanced from Hailer into North China, where it was stationed at Hyukaisenjo Kitoku. Shortly after, the "Hankow Operation" in Central China began, and the brigade participated in capturing Hankow. After this campaign, the brigade was active in various operations in Central China and contributed to the defeat of the enemy. After the beginning of the Second World War, the brigade advanced in the direction of North China, where it was assigned the mission of security in the Keihansen Region until the end of the war.

Over a period of years before World War II high-ranking Jap officers, according to all reports, had argued over the advisability of completely mechanizing the cavalry. Several viewpoints were taken as to the degree of mechanization necessary, but, upon experimentation with organization and equipment, the Japs decided it was necessary to retain some Horse Cavalry to be used for reconnaissance.

Until World War I, Jap cavalry, as a reconnaissance branch of the army, was chiefly Horse Cavalry and was included within the general organization of a division. The Horse Cavalry served the division on missions concerned with short-range reconnaissance, liaison with neighboring units, and security patrols in enemy territory. This type of cavalry (generally known as divisional cavalry) was organized as a comparatively small regiment composed of two or three troops. Jap experimentation showed that mechanization of the cavalry was necessary, from the various standpoints of speed, combat power, and endurance—the Russian use of horse troops by the thousands to the contrary. Although Horse Cavalry was found by the Japanese to be weak and not suited to modern warfare, there was strong opposition from many high-ranking Jap officers as to the complete abolition of Horse Cavalry.

Thus, Horse Cavalry units, motorized units, and armored units were combined to form a unit known as the division reconnaissance unit, and the three types of cavalry were to be employed in accordance with the type of terrain encountered.

Following is a chart of the various types of organization of the division reconnaissance unit:

Type "A" (KC) Rcn. Unit

1 armored company — 1 Horse Cavalry troop — 1 motorized company

Type "B" (OTSU) Rcn. Unit

1 armored company — 2 Horse Cavalry troops — 1 motorized company

*Press Branch, War Department Bureau of Public Relations.

Type "C" (HEI) Recn. Unit

1 armored company 2 Horse Cavalry troops

The above types of organization were actually employed in combat after the "China Incident," according to Japanese sources, in the following manner:

"1. In the event that favorable terrain or good roads are present, the motorized unit, utilizing its speed, will precede the other units, occupy strongpoints, and reconnoiter the terrain and the enemy's position. The armored unit will follow the motorized unit and augment its combat power. In this situation the movement will not depend upon the Horse Cavalry because of its inability to maintain the same rate of speed as both the motorized and armored units.

"2. In the event that poor roads or unfavorable terrain are encountered which would hinder the advance of the motorized units, the armored unit will precede the other units and will be followed by the Horse Cavalry unit which will conduct further reconnaissance. In this situation the motorized unit will proceed at a reduced rate and will constitute a reserve.

"3. In the event that it is possible to use the Horse Cavalry unit, the motorized unit, and the armored unit simultaneously in combat, the motorized unit will usually dismount from its vehicles and carry out a frontal attack on foot. The Horse Cavalry unit will maneuver over the difficult terrain and reconnoiter, or attack the flank or rear of the enemy. The armored unit will support either the Horse Cavalry unit or motorized unit in attacking and destroying the enemy, or in carrying out reconnaissance, in order to accomplish the mission of the division reconnaissance unit.

"Although the mission of the reconnaissance can be accomplished by the aforementioned method, the result of the whole operation, of which the reconnaissance is a part, will not be completely successful because the reconnaissance units do not have sufficient strength to completely crush the enemy resistance and still reconnoiter the situation to the rear of the enemy."

Leading Japanese military leaders put forth the following arguments in favor of Horse Cavalry:

"The fact that cavalry activities were limited in World War I was due to the special nature of the combat area. When large armies are being deployed in a small area such as Europe there is hardly space enough to use cavalry groups in the proper manner. The difficulty in handling cavalry is not inherent to it as a particular branch of the army. The combat area in which Japan expects to use its armed forces is the large continent of Asia. Europe is not comparable to Asia in size. Therefore, the cavalry can be expected to fulfill its function in the Japanese Army.

"Fire power can be increased by future effort. But it cannot be concluded that in every case battles will be won quickly by decisive frontal assaults. Many instances will arise in which encirclement, flanking movements or raids will be the deciding factor. Mobile forces will be absolutely essential for these purposes. Hence the cavalry is indispensable."

It should also be added that it was difficult for Japan to organize a sizable mechanized cavalry force rapidly because of handicaps in mechanical ability and iron resources.

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New Regular Army Officers

The Armored Cavalry Journal takes great pleasure in welcoming these officers who have successfully passed the examinations for the Regular Army and have been appointed therein.

THE officers listed below were nominated by President Truman for permanent commissions in the cavalry branch of the Regular Army. They are among the 9,831 chosen from more than 100,000 applicants.

The grade given each officer in the following list is his permanent grade in the Regular Army. In practically all cases the officers hold higher temporary commissions in the Army of the United States.

1st Lt. (Lt. Col.) David D. Klous, 3000 39th St., N.W., Washington, D. C.
1st Lt. (1st Lt.) William J. Lynn, PO Box 744, Anniston, Ala.
1st Lt. (Maj.) A. T. Netterblad, Jr., Box 287, Miami, Ariz.
2d Lt. (1st Lt.) Alfred P. Jelley, 1038 East Fourth St., Tucson, Ariz.
1st Lt. (Lt. Col.) Willis G. Ethel, Box 2417, Bisbee, Ariz.
1st Lt. (Maj.) John M. Davis, 17 W. Missouri Ave., Phoenix, Ariz.
1st Lt. (Lt. Col.) Edgar T. Guenther, Box 111, Whiteriver, Ariz.
Capt. (Lt. Col.) John D. Striegel, 511 South Hill St., Globe, Ariz.
1st Lt. (Lt. Col.) Cecil Snoddy, 528 North Plumen Ave., Tucson, Ariz.
1st Lt. (Maj.) Eugene L. Keeth, Box 506, Wilcox, Ariz.
Capt. (Lt. Col.) Maurice E. Webb, 719 N. First Ave., Tucson, Ariz.
1st Lt. (Maj.) Art H. Davis, 908 E. Forth St. Tucson, Ariz.
Maj. (Col.) Carl N. Smith, 1808 E. Edison, Tucson, Ariz.
Capt. (Col.) Charles B. Layton, 505 First Ave., Safford, Ariz.
1st Lt. (Maj.) George R. Dunn, Lake Village, Ark.
1st Lt. (Capt.) Joseph W. Jarvis, Dept. of Natural Resources, Div. of Fish and Game, Ferry Building, San Francisco 1. Calif.
1st Lt. (Lt. Col.) Frank M. Muller, 3459 Divisadero, San Francisco, Calif.
2d Lt (Capt.) Jack P. Libby, 4317 Garthwaite Ave., Los Angeles, Calif.
Capt. (Capt.) Victor B. Fox, 1125 Butte St., Redding, Calif.
1st Lt. (Maj.) Warren M. Hargrave, 1250 Lincoln Ave., Palo Alto, Calif.
1st Lt. (Capt.) Martin O. Soresen, 861 Sutter St., San Francisco, Calif.
1st Lt. (Lt. Col.) Leroy F. Clark, Jr., Box 544, Palo Alto, Calif.
2d Lt. (1st Lt.) James R. Drew, 311 Meyers Place, Inglewood, Calif.
1st Lt. (Lt. Col.) Claire S. Curtis, 348 Orange, Long Beach, Calif.
1st Lt. (Col.) George S. Downer, Rancho De Los Olivos, Los Olivos, Calif.
2d Lt. (1st Lt.) Jack MacFarlane, 8261 Romaine St., Los Angeles, Calif.
1st Lt. (Capt.) Donald F. Isaacson, PO Box 272 West End Station, Colorado Springs, Colo.
Capt. (Lt. Col.) Donald M. MacWillie, 7 Meadowbrook Road, Darien, Conn.
1st Lt. (Capt.) Jewett A. Dix, Fairfield, Fla.
Maj. (Lt. Col.) Thomas H. Sills, 403 Seybold Building, Miami, Fla.
Capt. (Lt. Col.) Wilburn L. Strickland, Carrollton St., Buchanan, Ga.
1st Lt. (Maj.) Thomas H. Stewart, 615 Crestridge Drive, Atlanta, Ga.
1st Lt. (Capt.) Harry J. Davis, 584 N. Milledge Ave., Athens, Ga.
1st Lt. (Lt. Col.) Walter B. McKenzie, Montezuma, Ga.
1st Lt. (Maj.) Harmon L. Boland, 208 2d St., Ocilla, Ga.
1st Lt. (Lt. Col.) John W. Yow, 2006 North Patterson St., Valdosta, Ga.
1st Lt. (Capt.) Jonathan R. Burton, 3509 Kenilworth, Berwyn, Ill.
Capt. (Capt.) William L. Blake, 462 Sperry St., Bushnell, Ill.
1st Lt. (Maj.) Charles E. Wright, 311 9th Ave., Sterling, Ill.
2d Lt. (1st Lt.) Milford L. Killian, Jr., Trenton, Ill.
1st Lt. (Maj.) Herman M. Marlow, Wyanet, Ill.
Capt. (Lt. Col.) Hal C. Pattison, Alexis, Ill.
1st Lt. (Capt.) William J. Walker, 1325 Sage St., Evanston, Ill.
1st Lt. (1st Lt.) Robert H. Von Burg, 1314 North 5th St., Quincy, Ill.
1st Lt. (Capt.) Gerald V. Reberry, 507 South Locust St., Jefferson, Iowa.
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Maj. (Lt. Col.) Glen L. Schmidt, 422 Belmont Court, Waterloo, Iowa.
1st Lt. (Capt.) Robert E. Honeyman, Madison, Kans.
Capt. (Maj.) Eugene J. Field, 22B Sheridan, Fort Riley, Kans.
Capt. (Lt. Col.) Wheeler G. Merriam, 14B Forsythe Ave., Fort Riley, Kans.
Capt. (Lt. Col.) Peter H. Dahmlow, The Cavalry School Mess, Fort Riley, Kans.
Capt. (Capt.) Franklin L. Quinton, Schwartz Apt., Junction City, Kans.
Capt. (Maj.) Wendell M. Broadus, Reading, Kans.
1st Lt. (1st Lt.) John S. Nickell, 133 Cherokee Park, Lexington, Ky.
1st Lt. (Lt. Col.) Wm. C. Rountree, 224 Poplar Drive, Elizabethtown, Ky.
Capt. (Lt. Col.) John R. Dey, c/o PM, New Orleans, La.
Capt. (Maj.) Eugene G. Hite, Box 8, Rising Sun, Md.
1st Lt. (Capt.) Clayton N. Gompf, Providence Road, R.F.D. 6, Towson, Md.
1st Lt. (Capt.) William R. Cory, 4710 College Ave., College Park, Md.
Capt. (Lt. Col.) Briard P. Johnson, 11 Pine St., North Amherst, Mass.
1st Lt. (Maj.) Arthur C. Avery, 19 Cosby Ave., Amherst, Mass.
1st Lt. (Capt.) James T. Burke, 26½ Summer St., Ipswich, Mass.
Capt. (Lt. Col.) Leslie D. Goodall, 45 Glen St., Holyoke, Mass.
1st Lt. (Capt.) Albert W. Avkroyd, 2 Warden St., Worcester 4, Mass.
1st Lt. (Maj.) Robert B. Crayton, 9 Newcomb St., Arlington 74, Mass.
1st Lt. (Maj.) Donald H. Cowles, 5 Cottage St., Fairhaven, Mass.
1st Lt. (Lt. Col.) Calvin S. Hannum, 58 Converse Ave., Malden 48, Mass.
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Maj. (Lt. Col.) Arthur T. Kirley, Hayden Rowe St., Hopkinton, Mass.
1st Lt. (Maj.) Floyd W. Townsley, Valley Road, Ashfield, Mass.
Maj. (Lt. Col.) Rosewell H. King, R.F.D., Uxbridge, Mass.
2d Lt. (2d Lt.) Leslie E. Shumway, 31 Rollinson Road, Worcester, Mass.
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1st Lt. (Lt. Col.) Clifford A. Curtis, 75 East Main St., Hopkinton, Mass.
1st Lt. (Capt.) Richard F. Briggs, Hanover Center, Mass.
Capt. (Lt. Col.) Jerome L. Spurr, 62 Fiske Road, Wellesley Mills 82, Mass.
Capt. (Capt.) John H. Gibson, 15361 Prest Ave., Detroit, Mich.
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1st Lt. (Lt. Col.) Rudolph Barlow, Allegan, Mich.
1st Lt. (Lt. Col.) Ralph L. Dickie, Box 348, Manistique, Mich.
1st Lt. (Lt. Col.) Gilbert O. Wymond, Jr., 1430 Siminole St., Detroit, Mich.
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1st Lt. (Maj.) James W. Cocke, 42 Middleton, Nashville, Tenn.
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1st Lt. (Lt. Col.) J. F. Hollingsworth, Woodlawn Ranch, Sanger, Tex.
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1st Lt. (Maj.) Norvell R. Stark, 5105 Vanderbilt, Dallas, Tex.
1st Lt. (Maj.) Milton T. Hunt, Jr., Box 398, Brackettville, Tex.
1st Lt. (Maj.) Merle L. Goodrich, 116 Hot Wells Blvd., San Antonio, Tex.
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1st Lt. (Capt.) James H. Lee, 4815 Philip St., Dallas, Tex.
2d Lt. (Capt.) John T. Pierce, III, 3415 Guadalupe St., Austin, Tex.
1st Lt. (Maj.) Andrew R. Cheek, Box 67, Stockdale, Tex.
1st Lt. (1st Lt.) William M. Jones, 303 Ridgemont St., San Antonio, Tex.
Capt. (Lt. Col.) William E. Eckles, College Station, Tex.
1st Lt. (Maj.) Ted F. Douthitt, 3710 Huego St., El Paso, Tex.
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1st Lt. (Maj.) Jack W. Fickessen, 2912 Marrow Ave., Waco, Tex.
1st Lt. (Maj.) Charles T. Krampitz, 822 Booty St., Corpus Christi, Tex.
2d Lt. (1st Lt.) William G. Weaver, Jr., 240 Bushnell Ave, San Antonio, Tex.
1st Lt. (Capt.) William J. Boehmer, Box 224, Daingerfield, Tex.
1st Lt. (Maj.) Albert H. Hislop, 64 Main, Ludlow, Vt.

1st Lt. (Capt.) George S. Andrew, Jr., Northfield, Vt.
1st Lt. (Col.) Emett R. White, Arch St., Pittsford, Vt.
Capt. (Col.) Alfred E. Stevens, 3207 First St., N., Arlington, Va.
2d Lt. (1st Lt.) Edward J. Stenger, 3221 Ellwood Ave., Richmond, Va.
1st Lt. (Lt. Col.) George T. Pitts, Jr., 3676 Gunston Rd., Alexandria, Va.
1st Lt. (Lt. Col.) Michael Popowski, Jr., 3514 S. Wakefield St., Arlington, Va.
Capt. (Maj.) John L. Peyton, Steephill, Staunton, Va.
Maj. (B. G.) Glen C. McBride, 4827 North 16th Rd., Arlington, Va.
1st Lt. (Capt.) Norvell M. Walker, 7th and Court Sts., Lynchburg, Va.
2d Lt. (1st Lt.) Erwin R. Brigham, 604 Pollard Park, Williamsburg, Va.
Maj. (Col.) Glenn McBridge, 3425 Martha Custis Dr., Park Fairfax, Va.
2d Lt. (1st Lt.) Arnold V. Anderson, 5005 Phinney Ave., Seattle, Wash.
1st Lt. (Maj.) Brooks O. Norman, 2518 31st Ave., South, Seattle, Wash.
1st Lt. (Capt.) Robert J. Bird, 1385 33d Ave., South, Seattle, Wash.
Capt. (Maj.) Norman W. Parsons, 8 Forbes St., Elm Grove, Wheeling W. Va.
Capt. (Lt. Col.) Raymond B. Steiner, 2018 W. Walnut St., Milwaukee, Wis.
1st Lt. (Capt.) Arthur A. Olson, 913 22d St., Superior, Wis.
1st Lt. (Maj.) Matt W. Werve, 6119 11th Ave., Kenosha, Wis.

The table shows the breakdown by ranks and branches of the Regular Army appointees.

	Maj.	Capt.	1st Lt.	2d Lt.	Maj.	Capt.	1st Lt.	2d Lt.	Total
					Detailed to Corps of Military Police				
Infantry	54	263	1,123	144	14	32	71	3	1,704
Air Corps	77	353	3,150	553					4,133
Field Artillery	53	152	534	70					809
Coast Artillery Corps	25	107	301	30					463
					Detailed to Transportation Corps				
Quartermaster Corps	20	120	160	7	31	117	190	30	675
Medical Corps	62	111	20						193
Dental Corps	43	83	2						128
Veterinarian Corps	8	72	4						84
Adjutant General Depart.	11	47							58
Pharmacist Corps	46	168	229	50					493
Chemical Warfare Service	5	18	52	4					79
Corps of Engineers	13	31	33	1					78
Ordnance Department	22	88	156	16					282
Signal Corps	15	66	101	13					195
Cavalry	9	40	105	20					174
Chaplain	50	62							112
						Detailed to AGD			
Finance Department	10	26	34	2			50		122
Judge Adjutant General	13	36							49
									Grand Total
Totals	536	1,843	6,004	910	45	149	311	33	9,831

Activation of Organized Reserve Begins This Summer

ANOTHER step in the organization of the postwar Army of the United States will be taken this summer when activation of units of the Organized Reserve Corps will begin. The Organized Reserve Corps will continue to provide the units and personnel required to supplement the Regular Army and the National Guard in the event of an emergency.

Present War Department planning contemplates that reserve units will be organized under three classes:

1. "War-strength" units with a full complement of officers and enlisted men, supplied with essential equipment required for training and initial mobilization.

2. Units with a full complement of officers and a cadre of key enlisted personnel and essential training equipment.

3. Units with an assigned complement of officers only.

Initial activation will normally be in the third class, with progressive development through the second, into the first class. The final program calls for a large number of units under each of the above categories.

The fully organized units in the first class will form that portion of the Army of the United States designed to provide a balanced force when considered in conjunction with the Regular Army and the National Guard. These will be formed largely as "affiliated" units, and will be sponsored by business enterprises and organizations, and those civic organizations whose normal activities are closely allied with a military requirement. Examples of units in this group are Ordnance Motor Vehicles Assembly Companies, Heavy and Medium Maintenance Companies, Tire Repair Companies, Signal Operations and Construction Battalions, Quartermaster Depot and Sales Companies, Hospital Units, and Engineer Service and Construction units.

Although the exact number and types of units cannot be tabulated until the postwar program has been finalized and approved, Ground Forces units will include airborne, armored, and infantry divisions, and supporting units. Reserve units of the Air Forces will also be of all types, both combat and service.

Standards of training will vary, according to the classification of the unit. The war-strength units in the first class will be trained and equipped to take the field and function successfully in their assigned mission in the event of an emergency. Each of these units will have both active duty and inactive home training each year. Those of the second and third category will be given similar training to the extent required by their mobilization priorities.

Initial activation of units this summer will be based on the density of male population of military age, coupled with proper geographical distribution with the recently established Organized Reserve Military Areas, availability of personnel for units requiring technically trained personnel, and the availability of similar types of units of the Regular Army and National Guard in connection with active peacetime training facilities.

Initial activation of units this summer will be accomplished as follows: in each of the recently established Reserve Military Areas, the records of available reserve officer and enlisted personnel will be reviewed, and assignment of officers and enlisted personnel to individual units will be made, and the units activated.

The commanding generals of the Service Commands within the United States will be responsible for the administration of all personnel of the army within their respective areas.

In addition to personnel assigned to organized reserve units, there will be a requirement for a large number of officers and enlisted men as a reservoir to constitute the strength needed for expansion of the army in the event of mobilization and as replacements for all components. Such personnel will be trained as individuals or in some cases as composite units.

More than 225,000 officers of World War II have already accepted commissions in the Organized Reserve Corps. Procurement will be continued from ex-officers of World War II, graduates of accredited Senior ROTC units, graduates of officer candidate and aviation cadet training schools, flight officers who served creditably during the war, and specialists, including doctors, ministers, lawyers, and such technical experts as may be required.

Approximately 300,000 men have already enlisted in the Enlisted Reserve Corps, which is part of the Organized Reserve Corps, and it is expected that this figure will be materially increased before demobilization is complete. All enlisted personnel of the armed forces during World War II are eligible for ERC and army personnel may retain their present grade and ratings if they enlist within six months from separation date.

Promotion of officers under the present plan will be based upon length of service in grade, efficiency, and demonstrated command or staff ability at the appropriate level. Promotions for enlisted men will be based on the regulations prescribed for the Regular Army.

The Organized Reserve program is completely voluntary.

Service Medals and Decorations*

THIS is background information to help you recognize the War Department's decorations and medals, and to give you a brief history of each of them. You'll probably want to retain this list for future reference. They are listed in the order of their precedence (the Oak Leaf Cluster being issued in lieu of an additional medal with the precedence of the medal it represents). Also included are the various service medals awarded to Military personnel who have taken part in the campaign or during the emergency period the medals represent. These are earned by honorable service only. Here is the list:

Decorations for Valor and Achievement

Medal of Honor

This, the highest and most rarely awarded decoration conferred by the United States, was established by Act of Congress in 1862. It is awarded in the name of Congress to an officer or enlisted man of the Army, who, in actual conflict with an enemy, distinguishes himself conspicuously by gallantry and intrepidity at the risk of his life and above and beyond the call of duty.

The Medal of Honor is a five-pointed star, surrounded by a laurel wreath, suspended from a bronze bar bearing the inscription, "For Valor," and surmounted by an eagle. In the center of the star is a head of Minerva, encircled by the inscription, "United States of America." On the reverse of the medal are engraved the grade, name, and organization of the recipient, with the place and date of the act for which the award was granted. The ribbon is light blue, with thirteen white stars.

Distinguished Service Cross

Instituted by Congress in 1918, the Distinguished Service Cross is awarded to persons who, while serving in any capacity with the Army of the United States, distinguished themselves by extraordinary heroism in connection with military operations against an armed enemy.

It is a cross of bronze with an eagle on the center. Below the eagle, is a scroll bearing the inscription "For Valor." On the reverse the name of the recipient is engraved within a wreath. Its ribbon is a broad band of blue, bordered on both edges by narrow bands of red and white.

Distinguished Service Medal

Dating also from 1918, this decoration is awarded to persons who, while serving in any capacity with the Army of the United States, distinguished themselves by exceptionally meritorious service to the Government in a duty of great responsibility, and to all enlisted men of the Army to whom the certificate of merit had, on or before July 9, 1918, been granted under the provisions of previously existing law.

The coat of arms of the United States in bronze surrounded by a circle of dark blue enamel bears the inscription "For Distinguished Service" and the year of award. On the reverse is engraved the recipient's name upon a scroll on a trophy of flags and weapons. The ribbon is composed of bands of scarlet, a stripe of dark blue, a band of white, a stripe of dark blue, and a band of scarlet.

The Legion of Merit

The award of the Legion of Merit will be made to outstanding officers and enlisted men of the armed forces of the United States or of friendly foreign nations who shall have distinguished themselves by exceptionally meritorious conduct in the performance of outstanding services.

This decoration, like the Purple Heart, stems from the Badge for Military Merit, America's oldest decoration, established by George Washington in 1782. As was the case with the Badge for Military Merit, it will be awarded for "extraordinary fidelity and essential service." It will constitute a reward for service in a position of responsibility, honorably and well performed.

The design of the Legion of Merit has been developed from the Great Seal of the United States, also approved by Congress in 1782.

The obverse or front of the Badge of the Legion of Merit is a five-pointed American star, of heraldic form, in red and white enamel, centered with a constellation of the 13 original stars on a blue enameled field breaking through a circle of clouds. The star is backed by a laurel wreath, the symbolic award for achievement, which is interlaced with crossed war arrows in gold, pointing outward, representing the protection afforded by the armed forces to the Nation.

On the reverse are the words, "United States of America," inscribed on a circling ribbon. In the center is space left for inscription of the name and rank of the individual to whom the award is made. Surrounding this is a band which carries the words (taken from the reverse of the Great Seal) "Annuit Coeptis" (He (God) has favored our undertakings), and the date MDCCLXXXII, the year of the founding of the decoration. The ribbon is of purple-red color, edged with white.

Silver Star

The Silver Star was not instituted until 1935, but like the Distinguished Service Cross and Distinguished Service Medal is retroactively awarded. It is granted to persons serving in any capacity with the Army cited for gallantry in action which does not warrant the award of a Medal of Honor or the Distinguished Service Cross.

The design is a silver star superimposed on a bronze star, the rays of the two coinciding. On the reverse is engraved the inscription "For gallantry in action" and the name of the recipient. On the ribbon are stripes of blue, white, blue, white, red, white, blue, white and blue.

*The Reserve Officer.

Distinguished Flying Cross

The Distinguished Flying Cross is awarded to any person, who, while serving in any capacity with the Air Forces of the Army of the United States, subsequent to April 6, 1917, distinguished himself by heroism or extraordinary achievement while participating in an aerial flight. No person is eligible for this award for any act performed prior to November 11, 1918, except (1) Officers or enlisted men who have heretofore been recommended for but have not received the Congressional Medal of Honor, the Distinguished Service Cross or the Distinguished Service Medal; (2) Officers or enlisted men who displayed heroism while serving as instructors or students at flying schools.

On a bronze cross patee is a four-bladed propeller. On the reverse are engraved the grade, name, and organization of the recipient, with the date of award. The ribbon's stripes are blue, white, blue, white, red, white, blue, white and blue.

Soldier's Medal

Instituted in 1926, this decoration is awarded to military personnel of the Army of the United States and to members of the Navy, Marine Corps and foreign military personnel serving with the Army who have distinguished themselves by heroism not involving actual conflict with an enemy.

On a bronze octagon is displayed an eagle standing on a fasces between groups of stars and above a spray of leaves. A shield on the reverse is inscribed "U.S." and supported by sprays of laurel and oak leaves. The words, "Soldier's Medal," "For Valor," and the recipient's name appear as inscriptions. The ribbon is composed of two outside stripes of blue, with the center containing 13 white and red stripes of equal width.

Bronze Star Medal

The Bronze Star Medal was authorized February 4, 1944, by President Roosevelt. It was established for award to any person, who, while serving in any capacity in or with the Army, Navy, Marine Corps, or Coast Guard, on or after December 7, 1941, distinguished, or has distinguished, himself by heroic or meritorious achievement or service, not involving participation in aerial flight, in connection with military or naval operations against an enemy of the United States.

The medal consists of a bronze star, in the center thereof a smaller and raised bronze star, the center lines of all rays of both stars coinciding. On the reverse side of the medal is the inscription "Heroic or meritorious achievement" and a space for the name of the recipient. The star is suspended by a rectangular-shaped metal loop with corners rounded from a silk moire ribbon. The ribbon is of Old Glory Red with a one-eighth inch vertical stripe of Royal Blue in the center. The stripe is separated from the red by white piping and the ribbon is edged with white piping.

No more than one Bronze Star Medal may be awarded to an individual, but for each succeeding heroic or meritorious achievement or service justifying such an award, an Oak Leaf Cluster will be given in lieu of the medal. The award of the Bronze Star may be made posthumously to a designated representative of the deceased.

Air Medal

Authorized by Executive Order of the President in 1942, the Air Medal is awarded to any person who, while serving in any capacity with the Army of the United States subsequent to September 8, 1939, distinguishes himself by meritorious achievement while participating in an aerial flight. This decoration is awarded in those cases where the act of meritorious service does not warrant the award of the Distinguished Flying Cross.

Pendant from a ribbon striped with the Air Corps colors of blue and gold is a fleur-de-lis which surmounts a compass rose. In relief on the rose is a swooping American eagle with lightning bolts clutched in his talons.

Purple Heart

Although originally established by General George Washington in 1782, the Purple Heart was not issued for many years. It was reëstablished in 1932. While it was conferred for any singularly meritorious action or service performed in the World War, its award by field commanders is now restricted to its alternate occasion: a wound, which necessitates treatment by a medical officer, and which is received by Army personnel in action with an enemy of the United States. Also a posthumous award of the Purple Heart is made to the next of kin of officers or enlisted men killed in action or who die of wounds received in action.

On a purple enameled heart within a bronze border is a profile head in relief of General George Washington in military uniform; above is his coat of arms between two sprays of leaves in green enamel. On the reverse below a shield and leaves is a raised bronze heart with the inscription, "For Military Merit," and the name of the recipient. The ribbon is purple with white edges.

Good Conduct Medal

This medal is authorized for award to those enlisted men of the Army of the United States, in all its components, who on or after June 28, 1941, honorably completed one year of active Federal military service and who are recommended for the award by their commanding officers for exemplary behavior, efficiency, and fidelity.

Obverse: an eagle with wings displayed and inverted, standing on a sword which rests on a closed book; and encircling design is formed by the words, "Efficiency, Honor, Fidelity." Reverse: Within wreaths of laurel and oak, a five-pointed star above a scroll bearing the words, "For Good Conduct." Ribbon: scarlet, with three white stripes on each side.

Each subsequent additional three-year period (up to five), justifying the award of this medal, entitles the wearer to a bronze clasp in the form of a knot.

Other Decorations

The Fourragere was awarded to organizations of the Army of the United States cited by the French for distinction in the World War. It consists of a single cord, braided and knotted, of yellow and green threads for four citations and of dark green with scarlet threads for two citations, terminated at the shoulder end with a buttonhole and at the free end with a ferret of blue metal. Attached to it are distinctive marks identifying the organization which won it. It is won by officers and men on duty with that organization or, as an individual decoration, by former members of that command who were present on four or two occasions (for the respective types) when citations were made.

Gold wound and service chevrons, earned during the World War and worn on the right and left sleeves respectively, are not authorized for the present war but may continue to be worn during the present war. A gold bar, worn horizontally on the left sleeve, has been authorized to represent six months of overseas service in the present war.

Badges

Badges are awarded in recognition of services rendered by Infantrymen and members of the Medical Department assigned or attached to the Infantry. There are three badges—the Combat Infantryman Badge, the Expert Infantryman Badge and the Medical Badge. Badges do not represent individual feats of valor or achievement but are awarded in recognition of exemplary proficiency in those tasks which are characteristic of the individual's branch of service.

The Combat Infantryman Badge

The Combat Infantryman Badge is won by satisfactory performance of duty in ground combat against the enemy. It consists of a miniature silver rifle mounted on an infantry blue field with silver border, three inches long and one-half inch wide, with a silver wreath extending across the bottom and up the sides of the badge.

The Expert Infantryman Badge

The Expert Infantryman Badge is won by attaining the standards of proficiency established by the War Department. It is a replica of the Combat Infantryman Badge minus the wreath.

The Medical Badge

The Medical Badge is awarded in recognition of the important rôle being performed by medical personnel on duty with infantry units. It is intended that this badge shall be awarded only to those who are daily sharing with the infantry the hazards and hardships of combat. The badge is of silver metal, elliptical in shape with the Medical Department's insigne the caduceus and the Geneva Cross superimposed on a litter surrounded by a wreath of oak leaves.

Service Medals

Designs symbolize the country in which the campaign or service took place or the enemy against whom the war was waged. Similar colors of the enemy nation may appear in the ribbon.

Civil War Campaign Medal

Obverse: head of Lincoln, surrounded by the words, "With malice toward none; with charity for all." Reverse: the words, "Civil War," with the dates, 1861-1865, within a wreath of oak and olive branches. Ribbon: two bands of blue and gray.

Indian Campaign Medal

Obverse: a mounted Indian; above the words, "Indian Wars," and below a buffalo skull and arrowheads. Reverse: a trophy composed of an eagle perched on a cannon supported by crossed flags, rifles, an Indian shield, and a quiver of arrows, spear, a Cuban machete, and a Sulu kris. Ribbon: alternate bands of red and black.

Spanish Campaign Medal

Obverse: a two-towered castle within a circle composed of the words, "War with Spain"; the date, 1898, a branch of tobacco plant and a stalk of sugar cane. Reverse: same as that of the Indian Campaign Medal. Ribbon: two bands of blue, separated by one of yellow, with a border of yellow on each edge.

Spanish War Service Medal

Obverse: sheathed Roman sword on a tablet inscribed, "For Service in the Spanish War." Reverse: coat of arms of the United States, surrounded by a wreath displaying the insignia of the Infantry, Artillery and Cavalry. Ribbon: green with a band of yellow 1/8 inch from each edge.

Army of Cuban Occupation Medal

Obverse: coat of arms of the Cuban Republic, with wreath and fasces, surrounded by the words, "Army of Occupation, Military Government of Cuba"; above the shield the dates, 1898 and 1902. Reverse: same as Indian Campaign Medal. Ribbon: band of red, yellow stripe, band of blue, yellow stripe, band of red, with a border of blue on each edge.

Army of Puerto Rican Occupation Medal

Obverse: two-towered castle and the words, "Army of Occupation, Puerto Rico"; branch of tobacco plant and stalk of sugar cane. Reverse: same as Indian Campaign Medal. Ribbon: band of blue, yellow stripe, band of red, yellow stripe, band of blue, with a border of red on each edge.

Philippine Campaign Medal

Obverse: cocoanut-palm tree; a lamp of knowledge and the scales of justice; the whole surrounded by a circle composed of the words, "Philippine Insurrection," and the date, 1899. Reverse: same as Indian Campaign Medal. Ribbon: broad band of blue between bands of red, with a narrow strip of blue on each edge.

Philippine Congressional Medal

Obverse: Color-bearer with the United States flag and a color guard; on the rim the words "Philippine" and "Insurrection" and below the date, 1899. Reverse: the words, "For patriotism, fortitude, and loyalty," in a wreath of pine and palm. Ribbon: band of blue, with a stripe of white separating it from bands of red, white and blue.

China Campaign Medal

Obverse: the Imperial Chinese five-toed dragon within a circle composed of the words, "China Relief Expedition," with the dates 1900-1901. Reverse: same as Indian Campaign Medal. Ribbon: band of yellow with edges of blue.

Army of Cuban Pacification

Obverse: coat of arms of the Cuban Republic with wreath and fasces, supported by two American soldiers with rifles at parade rest; the words, "Cuban Pacification," and the dates, 1906-1909. Reverse: same as that of Indian Campaign Medal. Ribbon: band of olive drab with a blue stripe separating it from bands of white and red on each edge.

Mexican Service Medal

Obverse: the Mexican yucca plant in flower, with mountains in the background; above the words, "Mexican Service," and the dates, 1911-1917. Reverse: same as Indian Campaign Medal. Ribbon: green stripe, band of yellow, and green stripe.

Mexican Border Service Medal

Obverse: a sheathed Roman sword on a tablet inscribed "For service on the Mexican border." The tablet is surrounded by a wreath. Reverse: same as that of Spanish War Service Medal. Ribbon: green with a yellow band in the center.

Victory Medal

Obverse: a winged Victory. Reverse: the inscription, "The Great War for Civilization," and the coat of arms of the United States surmounted by a fasces, and on either side the names of the allied and associated nations. Ribbon: colors representing two rainbows placed in juxtaposition.

The nineteen clasps authorized to be worn on the ribbon of this medal according to the service of the recipient are: Cambrai, Somme Defensive, Lys, Aisne, Montdidier-Noyon, Champagne-Marne, Aisne-Marne, Somme Offensive, Oise-Aisne, Ypres-Veneto, Defensive Sector, France, Italy, Siberia, Russia, England.

Army of Occupation of Germany Medal

Obverse: profile of General John J. Pershing in uniform of the World War, above four 5-pointed stars; the General's name inscribed on the dexter side, and on the sinister an unsheathed sword, point up; within a laurel wreath the years, 1918 and 1923. Reverse: an eagle with wings spread perched on Castle Erhenbreitstein within a circle composed of the words, "U. S. Army of Occupation of German" and three 5-pointed stars. Ribbon: stripes of blue, red, white, black, white, red, and blue.

American Defense Service Medal

Issued to military personnel on active Federal service of 12 months or longer and who in discharge of such service served at any time between September 8, 1939, and December 7, 1941, Ribbon: yellow with narrow red, white and blue stripes near the edges.

American Theater Campaign Medal

For one year or more service in the United States between December 7, 1941, and September 2, 1945. Also for service less than one year, but more than 30 days, outside of the continental United States and in the American Theater, which included all areas outside the European and Asiatic-Pacific Theaters. Ribbon: blue with narrow red, white and blue stripes in the center, representing the colors of the United States; a combination of narrow black and white stripes, representing the colors of Germany; and narrow red and white stripes representing Japan, near each end.

European-African-Middle Eastern Campaign Medal

For service in the theaters indicated. Ribbon: green for the green fields of Europe, with narrow stripes of United States colors in the center flanked by narrow stripes of the Italian colors of green, white and red near the left end, and by narrow stripes of the German colors near the right end; edges are brown for the sands of the desert.

Asiatic-Pacific Campaign Medal

For service in the theaters indicated. Ribbon: orange, with narrow stripes of United States colors in the center, flanked by narrow stripes of the Japanese colors near each end.

The Medal for Merit for Civilians

The Medal for Merit is the counterpart of the Legion of Merit, for award to civilians.

World War II Occupation Ribbon

For service in Germany, Austria or portions of Italy subsequent to May 8, 1945, and in Japan and Korea after September 2, 1945. Appropriate clasps marked "Germany" and "Japan" have been authorized to be attached to the ribbon of the medal to denote service in Europe and the Far East. Service performed between September 3, 1945, and March 2, 1946, both dates inclusive, with the Army of Occupation of Japan and (or) Korea will be counted only if the Asiatic-Pacific Campaign Medal has been awarded for service prior to September 3, 1945. Ribbon: white, 3/16-inch wide; black, ½-inch wide; red, ½-inch wide; and white, 3/16-inch wide. The service ribbon will be worn immediately after the World War II Victory Medal service ribbon.

The Proper Wearing of Service Ribbons

*by Major Hal D. Steward**

HIDDEN deep in the masses of Army Regulations, War Department Circulars, changes to regulations, etc., are the rules governing the correct wearing of Service Ribbons. Because of inaccessible information, many members of the military service today are seen wearing service ribbons improperly.

A total of 1,725,344 Army decorations and awards were made to Army personnel from December 7, 1941, through November 30, 1945, the War Department has announced. In addition to this, millions of Theater ribbons were also awarded.

Taking for granted that each member of the service knows exactly what ribbons he is entitled to wear then the problem of assembling them and placing them in the correct position on the uniform presents itself.

Ribbons for decorations and service have an established precedence with the Congressional Medal of Honor ranking the highest. They are placed on the uniform according to the following precedence long set by the War Department:

1. Medal of Honor; 2. Distinguished Service Cross; 3. Distinguished Service Medal; 4. Silver Star; 5. Legion of Merit; 6. Distinguished Flying Cross; 7. Soldier's Medal; 8. Bronze Star Medal; 9. Air Medal; 10. Commendation Ribbon; 11. Purple Heart; 12. Medal for Merit (civilian award); and 13. Good Conduct Medal.

Service ribbons awarded for service in Theaters of Operations are placed in the proper position according to the date they were awarded. In other words, the service ribbon awarded you first ranks the highest in position on the uniform.

In placing the ribbons on the uniform the most junior ribbon is placed on the bottom row and to the wearer's left. The senior ranking ribbon is placed on the top row and to the wearer's right. Seniority of colors is also involved in placing ribbons in the proper place. Blue, the senior color, is always worn to the right.

Foreign decorations and service ribbons rank below all American ribbons and therefore must always be placed on the bottom row and to the left.

The normal number of ribbons in a row is three. If there are too many rows, four may be placed in each row. The shortest row is always on top and centered. Ribbons are centered above the left breast pocket with one-eighth of an inch between the pocket-flap seam and the first row. If more than one row is worn there should be a space of one-eighth of an inch between each row. Badges are worn on the left breast above the line of service ribbons.

Let us, for an example, suppose a serviceman is entitled to the Silver Star, Bronze Star Medal, Purple Heart, Good Conduct Medal, Asiatic-Pacific Theater Ribbon, American Theater Ribbon, Victory Ribbon and Philippines Liberation Ribbon. They would be ranked on the uniform in the order just mentioned. The Silver Star and Bronze Star would be on the top row, centered, with the Silver Star on the wearer's right. The second row would be from right to left: Purple Heart, Good Conduct Medal and Asiatic-Pacific Theater Ribbon. The third and bottom row from right to left would be: American Theater Ribbon, Victory Ribbon and the Philippines Liberation Ribbon, which is a foreign award.

Battle stars are placed on the service ribbons with the points down. The arrowhead, which is given for an assault landing, is worn on the ribbon with the arrow point up.

One point of interest to Enlisted Men who have joined the Regular Army after serving on active duty during World War II as a commissioned officer is the change in Army Regulations allowing former officers of the recent war as well as World War I to wear a band of forest green braid around both sleeves of the service coat and short overcoat. This green braid will be one-half an inch wide and the lower edge of the braid will be three inches from the end of the sleeve.

When a new ribbon is awarded, a rearrangement of all the ribbons senior to this new award must be made so that it will be in its proper place.

"Decorations are awarded in recognition of and as a reward for extraordinary, unusual, or outstanding acts or services and are cherished accordingly by the recipients," according to Army Regulations 600-45, dated September 22, 1943. This regulation with its current changes will keep you posted on the award of ribbons and their precedence.

The Congressional Medal of Honor and Purple Heart are not awarded to personnel of foreign nations. The Distinguished Service Cross and Legion of Merit can be awarded to foreigners only after the approval of the President. The Medal of Honor, Distinguished Flying Cross and Soldier's Medal cannot be awarded to civilians.

*Press Branch, War Department, Bureau of Public Relations.

Vehicles of the 13th Armored Division, Third U. S. Army, pass along road to Braunau, Germany, while hundreds of captured Germans wait by the roadside.

THE 16TH ARMORED DIVISION

Since no action pictures of the 16th Armored Division were available—probably because it reached the ETO in time to be in combat only one day—a brief history of the Division is given here. This concludes a series of photos and brief histories of all armored divisions which has been published in The Cavalry Journal.

The 16th Armored Division was activated in July, 1943, at Camp Chaffee, Arkansas, where it remained throughout its training.

It left the United States in January, 1945, for the European Theater of Operations, its components at the time consisting of the 395th, 396th and 397th Armored Field Artillery Battalions; 5th, 16th and 26th Tank Battalions; 18th, 64th and 69th Armored Infantry Battalions.

Arriving in France on February 5, 1945, and assigned to the Third Army, the Division entered combat on May 6 when it launched its assault on the city of Pilsen, furthest point of American penetration into Czechoslovakia. The city was taken during the Division's one day of combat, during which it rounded up 8,000 prisoners and many civilians fleeing the Russians. It subsequently was stationed at Pilsen.

ARMORED DIVISIONS IN WORLD WAR II

(Conclusion)

Signal Corps Photos

Tanks of the 14th Armored Division roll into newly captured Eichstatt, Germany, with other U. S. Third Army elements. April 25, 1945.

U. S. Seventh Army tanks of the 20th Armored Division, XV Corps, line up a street in Munich in preparation for advance into the heart of the city. 45th Infantry Division, Germany. April 30, 1945.

Book Reviews

THE CONQUEST OF THE MISSOURI. By Joseph Mills Hanson. Murray Hill Books, Inc. $3.50.

This is one of the classic narratives of the American West, first published in 1909. This re-issue will undoubtedly meet a welcome audience of both old friends and new. Joseph Mills Hanson tells the story of the opening of the Northwest conveying to the reader the prevailing spirit of zest and enterprise. The story is told through the reminiscenses of Captain Grant Marsh, one of the greatest river pilots ever to navigate the Missouri—reminiscences of the years when the Northwest was being transformed from a lonesome wilderness inhabited by elk, buffalo, and hostile Indians, and small isolated forts and settlements to the mining and agricultural region of our time.

Through Captain Marsh, one learns of the surveying of the upper reaches of the Missouri, the Big Horn and Little Big Horn rivers, and the Yellowstone Valley, of the disastrous campaign of Custer's Seventh Cavalry, of the campaigns of General Terry and General Miles against the Indians, and of such things as the coming of the railroads and river boat races.

You will enjoy this complete account of the Missouri region from 1864 to 1883 if you read it for the first time, and welcome it as an old friend if you have read it before.

* * *

AMERICANS: A Book of Lives. By Hermann Hagedorn. John Day. $5.00.

Here is a volume of short biographical sketches of seventeen great Americans, Mark Twain, Oliver Wendell Holmes, Thomas A. Edison, Luther Burbank, Booker T. Washington, Theodore Roosevelt, Woodrow Wilson, Jane Addams, John Dewey, Louis D. Brandeis, George Washington Carver, Henry Ford, Helen Keller, Will Rogers, Herbert Hoover, Franklin Roosevelt, and Wendell Willkie. They are linked together to form an almost continuous story of great lives lived in the United States during the twentieth century. These seventeen lives are interwoven into a personalized history of the nation during the full century in which they lived. Beginning with the opening of the West (the life of Mark Twain), it takes the reader through the Civil War (the life of Holmes), and the industrial era (Carver, Edison, and Ford), and through World War II (with Franklin Roosevelt and Wendell Willkie).

These stories of great lives lived in the United States during the twentieth century were originally intended for publication abroad, as a step toward international understanding, but are now offered also to readers within the United States. These National sagas, familiar and dear to the heart of Americans will make a welcome addition to any library. The book can be read and enjoyed, just as one enjoys old friends.

ALL DOGS GO TO HEAVEN. By Beth Brown. Frederick Fell and Company. $2.50.

Have you ever heard the question spoken from young, inquisitive lips, "Mommy, will Rags go to heaven when he dies"; or perhaps had the self-same question occur to you? The ever-faithful, loving dog who is a true friend no matter what, the playful little puppy who drags away shoes and is generally a lovable nuisance—what happens to their personalities when death suddenly strikes? If you've lost a beloved dog, if you've longed for a pet you've never had, if you enjoy your own special dog's friendship from day to day, then you'll welcome this story by Beth Brown. It is the story of twelve little dogs in particular and all dogs in general. They live for you in a pet cemetery and speak to say that there is no death. There is only life in another form. You have not lost your dog; they are never lost.

This is the story of Hobo, who is welcomed to "Dog Heaven" by Old Buck, the patriarch; of little Rowdy, who left his earthly life when yet a pup; of Tramp, who still likes to drink beer with his master; and of frivolous, young Gwendolyn, the vamp. Hobo learns to overcome his sorrow at leaving his mistress and, in a loving dog-like manner, to soften his grief. He in turn welcomes others to the cemetery, among them Champ, the movie dog, and Young Buck, who lost his life in the war. Each dog lives for you in the pages of the book, and, though you may never have had a dog you'll find a warm spot in your heart for some canine—perhaps just a stray mutt you pass on the street.

This is a book for young and old. You will want to read and own it; above all, you will want your children, from youngest to oldest, to know its story. It is an ideal gift to a youngster for birthday or Christmas.

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Ernie Pyle, the most popular and widely read of war correspondents, pioneered in war reporting and, in bringing the war home to the people, made it real to millions for whom it had been too vast to comprehend. He accomplished this by his contact with the GI, by asking him how war felt, by living with him and sharing his experiences. *Here Is Your War* sold 1,320,000 copies, *Brave Men* 1,300,000 copies. When the European war was over, Pyle did not rest on his laurels, as well he might, but set off for the Pacific war, and here wrote his final book of war reporting. At best it is only a fragment—written as he went along while his memories were fresh—cut short by a Japanese bullet in the first part of the Okinawa campaign.

In *Last Chapter,* as in his other books, Ernie Pyle writes of the war with all honesty and no pretensions, seeing and telling the little things about war—the unheroic as well as the heroic, and thus making war become real. He reports the fight the way he saw it; he relates personal incidents; he names names and gives addresses; and, through it all, his facts have a sort of compassionate and wistful truth.

Of this brief, brave book—to which an Associated Press Correspondent wrote the last lines, "April 18—Ernie Pyle . . . was killed by a Japanese bullet through his left temple this morning."—and its author, the *New York Times* says, "Many of Ernie's stories were gotten at the risk of never living to write them. The whole Army, to him, was a sort of Lost Battalion which he rescued from the No-Man's-Land of the communiqué to bring as close to home as the written word can do. And it is not unfitting that out of all this Army he should have stayed with those who will not come back. He did not choose this—no soldier ever does. In his own words: 'They died and others lived and nobody knows why it is so. They died and thereby the rest of us can go on and on.'"

* * *

WRATH IN BURMA. By Fred Eldridge. Doubleday & Company, Inc. $3.00.

Among the unique personalities of World War II stands "Vinegar Joe" Stilwell—the General who was the central and dominating figure of the war in the Far East, the friend of the GI who marched with his men and led them over insurmountable difficulties, the determined and angry man who, after retreat from Burma, was not afraid to say, "We got the hell licked out of us." With this personality Fred Eldridge has embued *Wrath In Burma.* The book gives the reader the feeling that he was there, sharing with General Stilwell the trials and difficulties of this campaign. "Vinegar Joe" was never a brass hat, and this story is alive with anecdotes from his everyday life. Its pages are brightened by such characters as Braud, who drove the "Gen'l's" jeep, Buttercup, Stilwell's Chinese orderly, and Sergeant Jules (Gus) Reynault, his cook. It is full of incidents that

tell why the men of the CBI were deep in sadness and gloom on receiving word of Stilwell's recall.

Though built around General Stilwell, the book is a political history of Asia as well. It is not a soft book; it faces the uncensored facts in an attempt to bring clarity and coherence to the controversy that raged over the management of affairs in the Far East. It is a story about how the United Nations should not get along. The writer endeavors to show the reader and the United Nations that in order to gain harmony, first and foremost, agreements must be kept. He tells frankly how the British and Chinese impeded harmony in the Far East by failing to keep agreements—facts that were not generally known in America before the end of the war.

This is another well-written phase of World War II—one that contributes greatly to the complete picture, but aside from that it is a story you will want to read for pure enjoyment.

* * *

TRAIL DUST AND SADDLE LEATHER. By Jo Mora. Charles Scribner's Sons. $3.00.

Jo Mora was born in Uruguay in 1876 but came to the United States when a child. He was educated in Massachusetts and studied art in New York. After several years of work as a newspaper artist, he went to the west and southwest to study the Hopi and Navajo Indians, and there he stayed. *Trail Dust and Saddle Leather* is a book about the West, about the cowboy—his origin and his working tools—about western lore in general. Why did he write the book? This question is answered clearly in the preface.

"A great wave for 'riding Western on Western-broke horses with Western rigs' is sweeping the country. Today you'll find rodeos well patronized in the extreme East, and the fiesta silver-mounted stock saddle is no stranger in that fringe, where, but a few years ago, most folks there only knew that cowboys rode on a big, funny sort of cradle with a great, round, flat-topped doodad sticking up in front. Half of them did not know whether this was used as an emergency field writing desk or a permanent tray for their afternoon tea when exacting range duties kept these semiwild muchachos in the saddle.

"It was to clear up so many of these natural misconceptions, and to answer ever-increasing requests to describe in greater detail the various tools and accoutrements of the cowboy, with their genesis and evolution, that I was spurred on to write and illustrate this book."

This is a book about waddies, vaqueros, Buckaroos, Punchers, Cattlemen, Cowmen, Cowhands, Cowpokes, and Cowpunchers—how they work and how they live, and how their art has developed through the years. It is cleverly illustrated with drawings by the author, of the cowboy, himself, his techniques and his tools. You will read the book for enjoyment, but you may be sure that, when you have finished, you will know a lot about the West.

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THE ARMY WRITER. By David Klein. Military Service Publishing Company.

This is a book for anyone in the army who writes—every commissioned officer, every first sergeant, every clerk in every headquarters. It tells how to write correctly, easily, and so accurately that there is no danger of misinterpretation. Grammar is presented, not in the dusty, dry manner of textbooks, but as a means of making words mean to the reader what they mean to the writer. Mr. Klein offers a cure for the "mysterious malady of speech that attacks many an officer when he first chews his pencil in composing a military memorandum. . . . The victim of this disease can be readily recognized by his writings. He never 'begins' anything; he either 'initiates,' 'inaugurates,' or 'commences' it." In this brief and clearly written volume, the author shows the army writer how to avoid the stilted, long-winded military form and give himself "At Ease." For instance: *"The transfer of ordnance equipment may be accomplished by means of the execution of a shipping ticket by the property officer concerned,"* really means *"A property officer may transfer ordnance equipment by making out a shipping ticket."* He points out common faults which invite misinterpretation. *"In order to insure minimum injuries to crew members, bombs must be stacked neatly,"* and *"Hooks seldom break but usually fail by straightening under the load."* This book, well-indexed for easy reference, is a welcome deskside companion and one to be read for pleasure as well. An attractive feature is the last chapter, "In Business for Yourself," dealing with private writing. Even though writing may not be a part of your army routine this is a book for you. Whether you like to write, need to write, or have to write, *The Army Writer* will prove valuable.

COME OUT FIGHTING. By John Durant and Edward Rice. Duell, Sloan, and Pearce. $3.00.

Just as the title implies, this is a book about fighting. It is a pictorial history of the ring, containing over 200 prints and photographs, selected by Edward Rice, combined with text and captions by John Durant. Of interest, too, is the foreword by Quentin Reynolds. The authors give the history of pugilism from its beginnings with the Greeks to our time. They tell the stories of such great ring personalities as John L. Sullivan, Gentleman Jim Corbett, Ruby Bob Fitzsimmons, Dempsey, Tunney, and Joe Louis. They answer many questions, and among them, perhaps is an answer you've been wondering about.

As Quentin Reynolds says, "If you are one of us who sits tense just before the bell rings and for whom time stops when the referee, gray-clad and pale-faced under the piercing white lights, says "Come out fighting," you'll read this book with interest and excitement. And if you've never seen a fight before, nor read about one, nor looked at a fight picture, this is the book that will initiate you into the fraternity of fight fans."

EMPIRE AND THE SEA. By Fletcher Pratt. Henry Holt and Company. $3.50.

In this book Fletcher Pratt tells the story of British naval warfare from 1793 to 1805—twelve years which saw many engagements at sea, some large, others small. Beginning with the younger Mr. Pitt's request for war against the growing strength of the new French Republic, it tells of the "Glorious First of June," Aboukir, Copenhagen, Cape St. Vincent, and Trafalgar and the naval geniuses, Nelson, Jervis, Howe, and Hood. These were the men and battles that saved England from invasion, contributed to the downfall of Napoleon, and established Britain as ruler of the seas. An interesting picture of troubles with Ireland, mutinies in the channel fleet, difficulties over food and supplies, and political feuds is presented. A full and interesting account is given of the Battle of Trafalgar, which cost Lord Nelson his life but marked the beginning of the British Empire.

The author, well-known as a naval historian, has provided a clear and authentic account of war at sea.

* * *

THE AMERICAN. By Howard Fast. Duell, Sloan, & Pearce, Inc. $3.00.

This is the story of John Peter Altgeld of Illinois—the story of his rise from his lowly, uneducated beginnings on the farm of his immigrant parents to wealth and political power—the story of his sacrifice of money and position to champion democracy.

The Father of John Peter Altgeld was a hard man; between him and his son there was no love, only fear and too frequent and too hard punishment. Thus Altgeld's youth was spent with hard work, beatings, and only meager schooling. Then came the Civil War; and the youth, drawn by the glamour and the novelty, driven by a desire to escape his father, went to war. His war years were followed by more hard work—on his own now—in a struggle to become a successful lawyer and politician. With this success Altgeld's real story begins; now he emerges as a great American hero touching off a struggle between democracy and the forces that be, for as Governor of Illinois, he pardoned the convicted Haymarket anarchists. Before his defeat he captured the Democratic Party from Grover Cleveland and defied every newspaper in the land, winning an abiding place in the hearts of the American people. This is not the end however; his last days are even more dramatic, and it is now that he stands forth as the truly great *American*.

Howard Fast is a young novelist of great achievements, and *The American* is, perhaps, his best and warmest book. He has presented an intriguing portrait, against the background of America's coming of age, which hold one's interest from beginning to end.

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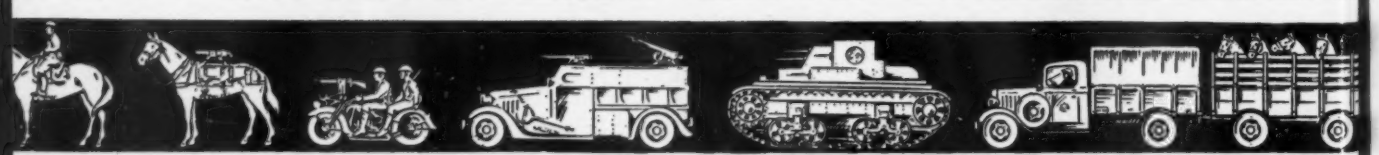
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